

UNION STATION INTERMODAL TRANSPORTATION CENTER FEASIBILITY STUDY

OCTOBER 2009



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Glossary



Amtrak	The informal name for the National Passenger Railroad Corporation, the main provider of intercity passenger rail service in the U.S.
ANC	Advisory Neighborhood Commission
Bikestation	A planned bike transit center at the southwest corner of Union Station
bus/transit deck	Located on the lowest level of the Union Station parking garage
D.C. Circulator	A contracted bus service funded by the District of Columbia
DDOT	District of Columbia Department of Transportation
DDOT MTA	District of Columbia Department of Transportation Mass Transit Administration
First Street Lobby	A pedestrian lobby envisioned for the existing space under H Street at the terminus of the North Pedestrian Walkway
Intercity	Connecting two or more cities
Intracity	Within a city
LOS	Level of service
MARC	Maryland Area Regional Commuter train service
Metrobus	Washington Metropolitan Area Transit Authority’s bus system
Metrorail	Washington Metropolitan Area Transit Authority’s heavy rail system. Often referred to as Metro, Metro Rail, or metro subway
MTA Maryland	Maryland Transit Administration
NoMa (BID)	North of Massachusetts Avenue (Business Improvement District)
North Pedestrian Walkway	Proposed to connect Union Station to the planned First Street Lobby
North-South Concourse	An expanded concourse for rail passengers, proposed by Akridge Development Corporation
TOD	Transit-Oriented Development
Train Concourse Connector	Proposed to connect MARC gates with Metrorail and the North Pedestrian Walkway
Union Station	The informal name for the Washington Union Terminal and its associated rail facilities
USITC	Union Station Intermodal Transportation Center
USRC	Union Station Redevelopment Corporation, the nonprofit corporation charged by Congress with protecting the federal government's interest in Union Station
vertical circulation	Indicates some method of ascent or descent from one level within the station to another
VRE	Virginia Railway Express
Washington, D.C.	District of Columbia
WMATA	Washington Metropolitan Area Transit Authority

1 Introduction

Since opening in 1908, Washington, D.C.'s (D.C.) Union Station has been a key transportation and retail hub in the regional and national infrastructure. Serving tens of thousands of travelers each day, to points as close as the Virginia and Maryland suburbs and as far as Toronto and Los Angeles, Union Station stands as a proud reminder of renowned architect Daniel Burnham's work.

The station is located near several of D.C.'s major roadway corridors, including Massachusetts Avenue, North Capitol Street, H Street, Constitution Avenue, and Interstate 395; is served by local, commuter, and tour bus services; and contains a Metrorail station, as well as 20 commuter and intercity rail tracks. Yet, because of its location and intermodal transportation services, perhaps the most visible mode of travel at Union Station is walking.

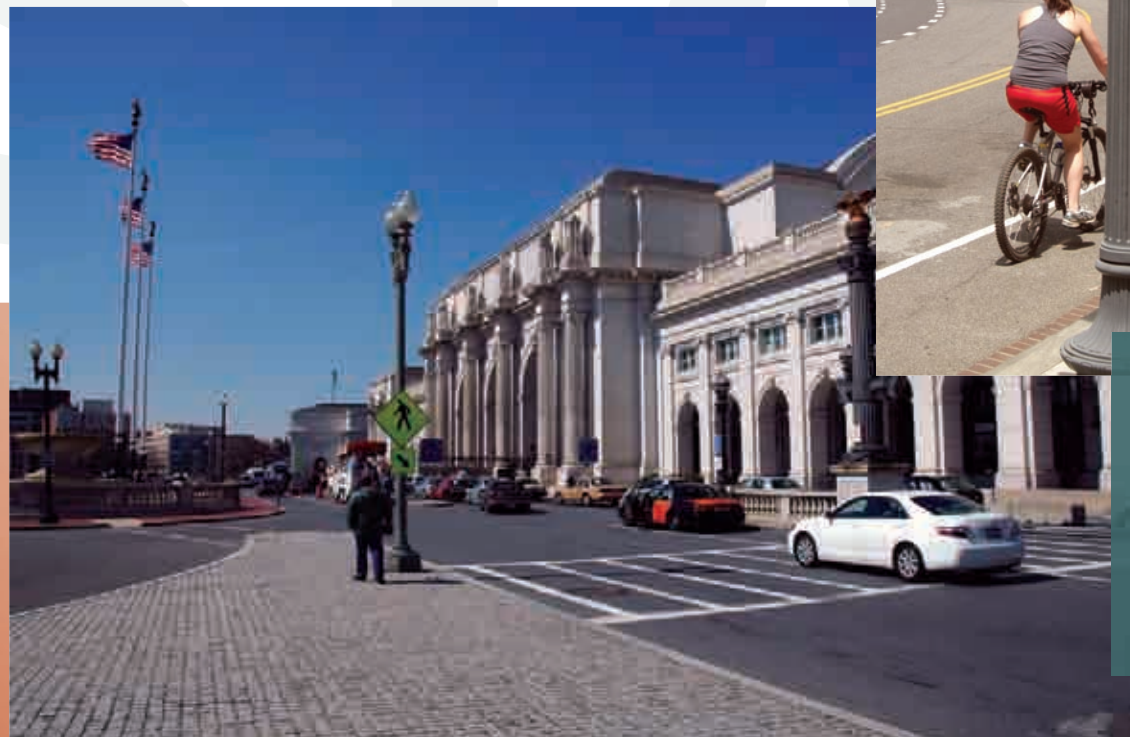
Pedestrians can be observed traveling to and from the station, transferring between transportation modes, shopping, and visiting. Bicycle travel is important as well, as Union Station serves as the southern terminus of the Metropolitan Branch Trail and will soon be

the location of a full-service Bikestation facility that has been planned and designed and will be operated by the non-profit organization Bikestation.

Annually, Union Station serves the nation's passenger rail system by accommodating more than five million riders. A typical day at the station sees more than 45,000 commuting trips for residents of the D.C. region, via both rail and bus. Additionally, Union Station is the Washington Metrorail system's busiest station, serving approximately 35,000 riders each weekday.

During peak tourist times, Union Station is a primary destination and embarkation area for tour buses and sightseeing services — part of the overall 32 million annual visitors to this historic tourist and transportation hub.

Given the critical role Union Station plays in providing transportation options to visitors and commuters alike, it is important to assess the station's continued ability to meet the needs of its users. To do this, a comprehensive analysis of facilities, modes, and corresponding user demands was undertaken. The results of this analysis include recommended improvements to accommodate future growth in and around the station, as well as the larger transportation network in which it plays a vital part.



View from the east side of Union Station (left) and the Metropolitan Branch Trail on First Street NE (right).



Existing Amtrak concourse (above) and Columbus Plaza traffic (below).

1.1 Purpose and Need

With transportation concerns and needs becoming increasingly more apparent in and around Union Station, the District of Columbia Department of Transportation (DDOT) initiated the Union Station Intermodal Transportation Center (USITC) Feasibility Study to evaluate:

- Growth in Union Station’s usage across all modes of transportation, including Amtrak intercity rail, the Maryland Area Regional Commuter (MARC) and Virginia Railway Express (VRE) commuter rail, and Metrorail and Metrobus;
- The need to examine the feasibility of improvements under consideration by various stakeholders at Union Station, including:
 - construction of a new rail passenger concourse for rail operations
 - upgrades to the Amtrak passenger concourse
 - new/improved pedestrian connections between Union Station and H Street
 - integration of commercial intercity bus service
 - tour bus parking needs and
 - integration of new streetcar services;
- The need to assess concerns for regional emergency evacuation;
- The need to assess proposed concepts for intermodal transportation facilities as part of the 3.0 million square foot mixed-use Akridge development (known as Burnham Place) for the 15 acres of air rights over the existing railroad tracks; and
- The need to assess transportation impacts of potential commercial and/or residential development in and near Union Station, including the Burnham Place development and other nearby growth areas.

Consequently, the Union Station Intermodal Transportation Center (USITC) Feasibility Study addresses existing needs and future demands, including:

- Identification of existing internal and external deficiencies and opportunities for improvement at the station, including issues related to regional emergency evacuation;
- Identification and quantification of future growth plans for all transportation modes and uses at the station; and
- Development of integrated and feasible recommendations for both the existing facility and construction of a potential new development (Burnham Place) on the adjacent air rights over existing rail tracks.

This study was developed with the participation of a diverse set of stakeholders including residents, property owners, and local and government organizations. The USITC Feasibility Study identifies environmental studies that would be needed in the event that recommended improvements are approved for implementation and includes a review of environmental impacts to the level of detail necessary to determine feasibility of proposed development.

1.2 Framework Goals and Principles

To guide the future development in and around Union Station, a planning context has been created that consists of overarching framework goals, planning principles, and needs that have been identified as part of the planning and public participation process. The relationship between the planning framework goals and principles is shown in **Table 1-1**.

Table 1-1 Planning Framework Goals and Planning Principles

Planning Framework Goals		Planning Principles
1	Maintain and enhance Union Station as a multi-modal transportation hub.	Transportation First
		Connectivity
2	Promote Union Station as a fluid pedestrian environment that supports comprehensive connectivity.	Pedestrian Priority
		Signage
3	Ensure enhanced safety and security in and around the station.	Safety and Security
4	Respect the architectural, cultural, and regional significance of the historic station.	Heritage Preservation
		Neighborhood Integration

Goal 1: Maintain and enhance Union Station as a multi-modal transportation hub. This goal recognizes Union Station’s current role as an intermodal hub for every mode of ground transportation in the region. Serving this transportation function and implementing improvements to serve it

even better are of crucial importance. Union Station is part of a “neighborhood” — one that consists of both interior and exterior spaces where people live, work, shop, socialize, recreate, and learn. Thus, planning efforts must recognize this context and ensure that this important hub is fully integrated with the overall transportation system as well as the immediately surrounding areas, by creating connectivity within and around the transportation system that emphasizes vertical and horizontal connections to transportation options, retail spaces, and service functions and ensures sufficient capacity for all modes of travel.

Goal 2: Promote Union Station as a fluid pedestrian environment that supports comprehensive interior and exterior connectivity.

Goal 2 emphasizes that the Union Station neighborhood is a pedestrian-scale environment: people walk to work at nearby government office buildings and many of the new office buildings in the North of Massachusetts Avenue Business Improvement District (NoMa BID); tourists walk to the U.S. Capitol; and commuters walk from commuter rail lines to transfer to Metrorail or



Framework Goals:
Multimodal
Hub, Pedestrian
Environment, Safety
& Security, Cultural
Significance

Metrobus. Consequently, safe and efficient pedestrian movement in and near the station is an essential part of the planning framework. Further, as Union Station is the region's most important intermodal transfer point and these transfers are made on foot, serving pedestrian travel with logical connections, sufficient capacities, and overall efficiencies is the core of its functionality. Maintaining efficient pedestrian movement throughout Union Station requires implementing a signage program with a prominent and consistent look that includes elements such as international signage, new technologies, and easily recognizable symbols (including Braille).

Goal 3: Ensure enhanced safety and security in and around the station.

Safety and security are of paramount importance in today's world. Systems that implement these measures are most effective and efficient when fully integrated into improvement and expansion plans from day one. For instance, providing passengers with a clearly identified route of exit is as critical in emergency situations as in daily operations, as the goal during any emergency is to keep the system functioning as close to normal as possible. Planning for safety, through flexible space designs, built-in redundancies, and accommodation of existing and future technologies, also helps to keep the station operating smoothly.

Goal 4: Respect the architectural, cultural and regional significance of the historic station.

Goal 4 recognizes the importance of Union Station's environment and the need for ongoing stewardship as improvements are made. Ensuring the preservation of the historic station as part of any improvement is essential in supporting the historic character of both the station and the surrounding neighborhood. Thus, all enumerated improvement plans at Union Station must consider its historic value and place within the neighborhood, which includes federal facilities such as the U.S. Capitol and the Thurgood Marshall Federal Judiciary Building, major office buildings, tourist attractions, retail areas, and residential areas.

1.3 Identified Needs

The needs that have been identified in the planning process to date help serve as criteria for how the USITC framework goals and planning principles can be achieved. It is possible for multiple needs to connect with a given planning principle and it is equally feasible for multiple planning principles to relate to the same framework goal. Each need has been assigned a symbol that will be carried through the rest of this study and will help build context for recommended improvements to Union Station.

- Capacity requirements refer to a given space's ability to hold a certain number of people; this will be a critical need as development ensues in and around Union Station.

Union Station circa 1920 (above) and Union Station today (below).



- Modal connections and pedestrian connections are interrelated. The ease with which passengers can transfer from one mode of transportation to another is dependent on proximity and linkages between modes. However, modal transfer is accomplished primarily through networks of walkways, tunnels, and crosswalks that enable pedestrians to connect with their chosen modes.



- Safety is defined by the avoidance of physical incidents through facility design. Eliminating physical gaps between modes and boarding/alighting platforms is an example of factoring safety into design. Security is maintained by the station's avoidance of incidents caused by man-made emergency circumstances. Installing security cameras to detect and deter threats is an example of proactive security.



- Historic character and preservation goes to the heart of protecting Union Station's role in D.C. and the nation both as a multi-modal transportation hub and an attraction that draws tourism.



- Transit-supportive land use consists of development that mixes uses (retail, office, residential) near transportation options to attract and sustain a diverse audience of transit riders.



- Circulation refers to the ease with which modal and pedestrian connections are achieved, as well as the flow of traffic in and around the station.



- Signage is the informational and directional instruction given to all modes of transportation, whether pedestrian or otherwise. Wayfinding is the ease with which signage is followed to find a certain path or destination.

Throughout this feasibility study, and especially in Chapters 6 and 7, potential improvements to Union Station will be identified and recommended based on identified needs, both existing and future. These recommended improvements will relate directly to each of the needs and every recommendation will include a description of how the planning goals and principles are being upheld and achieved.

1.4 The Planning Process

This feasibility study evolved from four phases: 1) data collection, 2) analysis, 3) planning charrettes, and 4) the development and feasibility analysis of recommendations. Each of these phases incorporated substantial input and contributions from key stakeholders. Phases I and II (data collection and analysis) took place in spring and summer 2008 and included a meeting with a Community Leaders Committee (CLC), meetings with the Technical Advisory Committee (TAC), a public meeting, and two half-day tours of Union Station to allow committee members and other interested parties to observe and comment on aspects of Union Station with the study team.

Phase III of the study consisted of a half-day planning charrette with primary stakeholders at Union Station, including representatives from all of the users of the station. This charrette was held in early October 2008. The goals were to: 1) identify and solicit information on the needs and demands of all affected stakeholders, 2) explore the interaction of these needs and demands in order to address as many as possible, and 3) develop plans that maximize opportunities and enhance potential synergies between the various uses at the station. After a follow-up charrette, held in early November 2008, the study team met individually with primary stakeholders to ensure that their concerns and viewpoints were represented in the study's final recommendations.

The last phase of the planning process includes the development of recommendations, as described in the previous section, and the presentation of these recommendations to the CLC and TAC for review and comment. Changes will be made as appropriate based on comments and then the final feasibility study report will be published by DDOT.

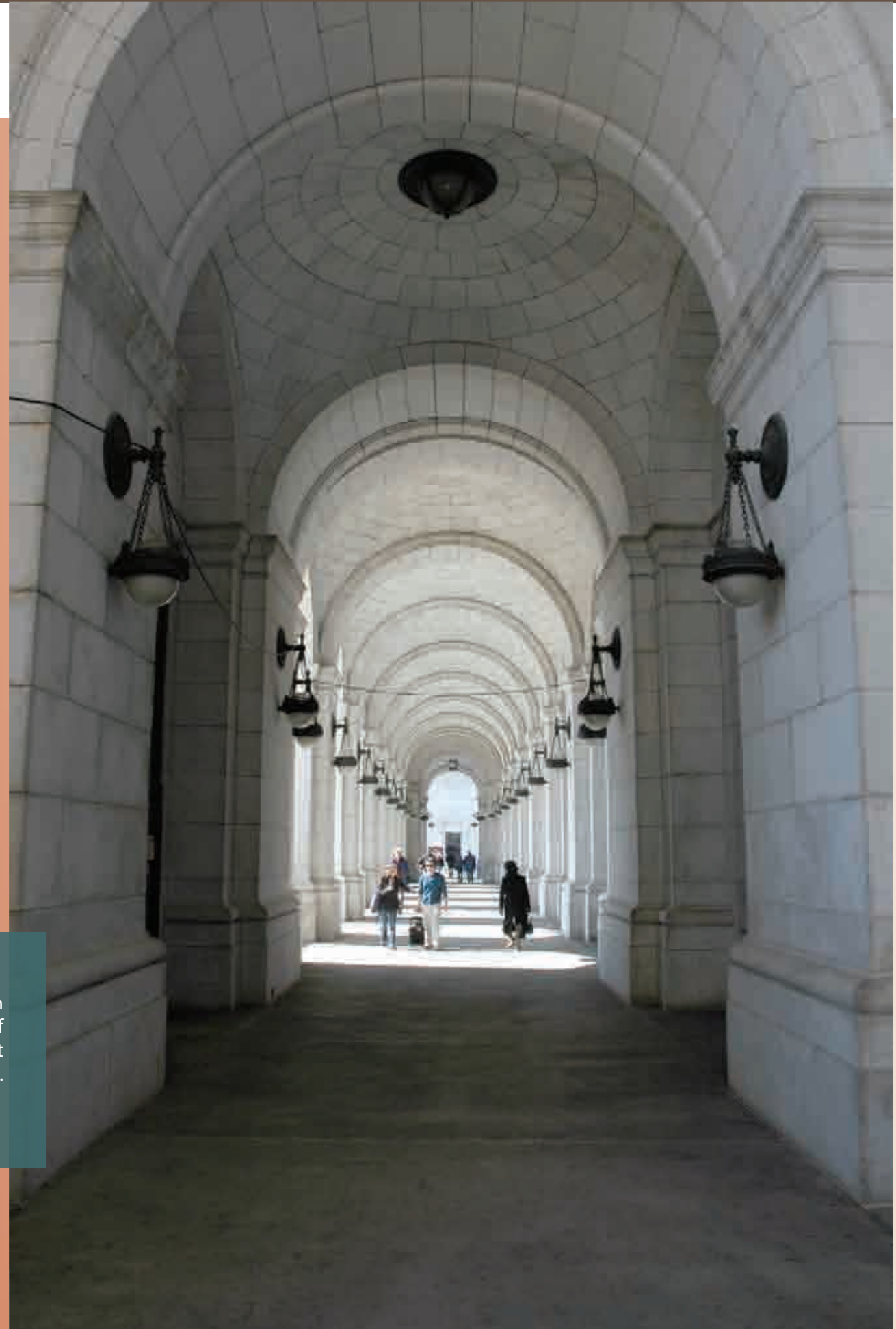
1.5 Relationship to Previous Studies

This study has been performed within the context of previous and ongoing planning activities in and near Union Station, as well as the Metro region. Union Station is a key feature of city-wide transportation planning efforts, including D.C.'s Strategic Transportation Plan, transit improvement plans, and bicycle and pedestrian plans.

A number of studies have also focused directly or indirectly on Union Station and its immediate vicinity, largely because of its role as D.C.'s major and historic transportation hub and its continued growth as an activity and destination center. The analyses and findings of previous studies provided the context and a starting point for the USITC Feasibility Study. Key results from some of these studies include the following:

- Columbus Plaza Redesign - Redesign of Columbus Plaza has been ongoing, with the intent of improving the aesthetic and functional qualities of the plaza. (Final Design 2009)
- Union Station Bikestation - A multipurpose bicycle transit center is being constructed at the southwest corner of Union Station. The station will provide bicycle storage, rental, and repair. (2005 Study, 2009 Implementation)
- District of Columbia Transit Improvements Alternative Analysis - This study investigates short-, intermediate-, and long-term solutions for new transit options that enhance the residential and economic vitality throughout D.C., with Union Station being an anchor for several options. (2005 analysis and 2008 update)
- Capitol Hill Transportation Study - This study focuses on improving safety, easing traffic congestion, and making transportation improvements in the area with a focus on major arterials. (2006 Study)
- Tour Bus Management Initiative – This initiative investigates the role of tour buses in D.C., which, although they serve a large demand, also create issues with parking, aesthetics, congestion, and pollution. Citing examples from other cities, the study recommends methods of how tour bus activity can be improved throughout D.C. (2008 - present)
- H Street NE Corridor Transportation Study - This study recommends several transportation improvements along H Street, including enhanced pedestrian and bicycling amenities and a proposed streetcar. (2004 Study)

Pedestrian
breezeway north of
Columbus Circle at
Union Station.



2 Study Context

2.1 Historical Significance

Union Station was designed by renowned architect Daniel Burnham of Burnham and Root in Chicago. Its size, splendor, and original cost were all monumental and befitted its initial role as a gateway to our nation's capital. Its railroad tracks opened in 1908 as a replacement for two other rail stations and tracks in the vicinity of the National Mall. According to its Web site, "at various times [the



station] employed a staff of over 5,000 people and provided such amenities as a bowling alley, mortuary, baker, butcher, YMCA, hotel, ice house, liquor store, Turkish baths, first-class restaurant, nursery, police station, and a silver-monogramming shop."

In 1969, the National Capital Planning Commission (NCPCC) put forward a plan to reinvent the space after it suffered damage from a train accident in 1953 and experienced a decline in rail travel with the debut of commercial aviation. The purpose of NCPCC's plan was two-fold: 1) to create a new and modern passenger terminal serving rail, intracity bus, and intercity bus passengers, desired by both the terminal owners and NCPCC; and 2) save the historic



terminal building, which was considered outdated and expensive to maintain by the owners. This plan included covering the Union Station tracks with a new passenger rail terminal topped with a parking garage for 120 buses and 4,000 cars. Additionally, intracity buses, rail passengers arriving by car, charter buses, and taxis were to circle a new passenger terminal just off the H Street overpass, with access to and from H Street, and access to and from Massachusetts Avenue NE via ramps placed on either side of the historic terminal, which was to be converted to a National Visitor's Center. However, construction on this plan lagged far behind schedule and was eventually halted without completion in the 1970s.

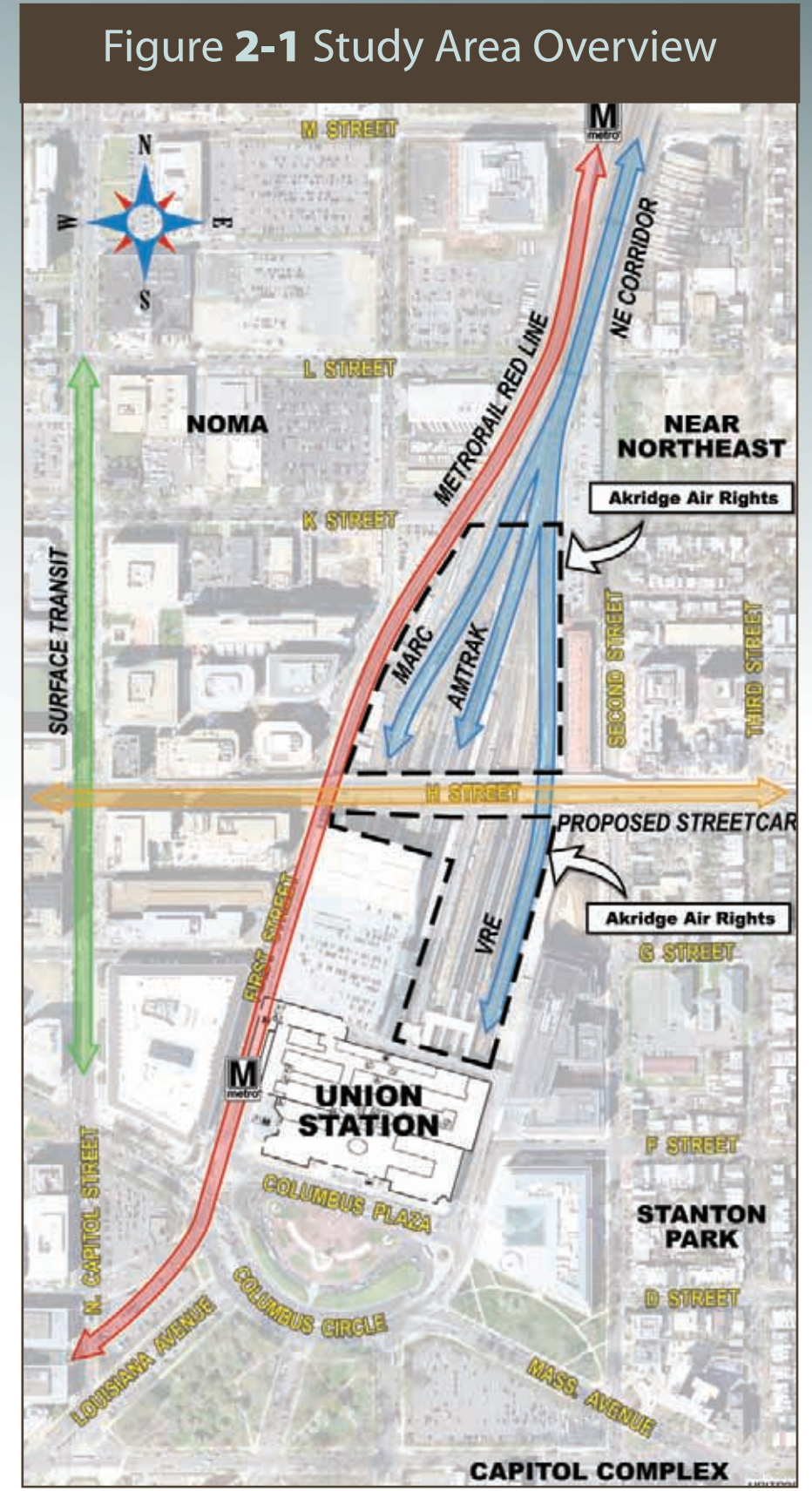
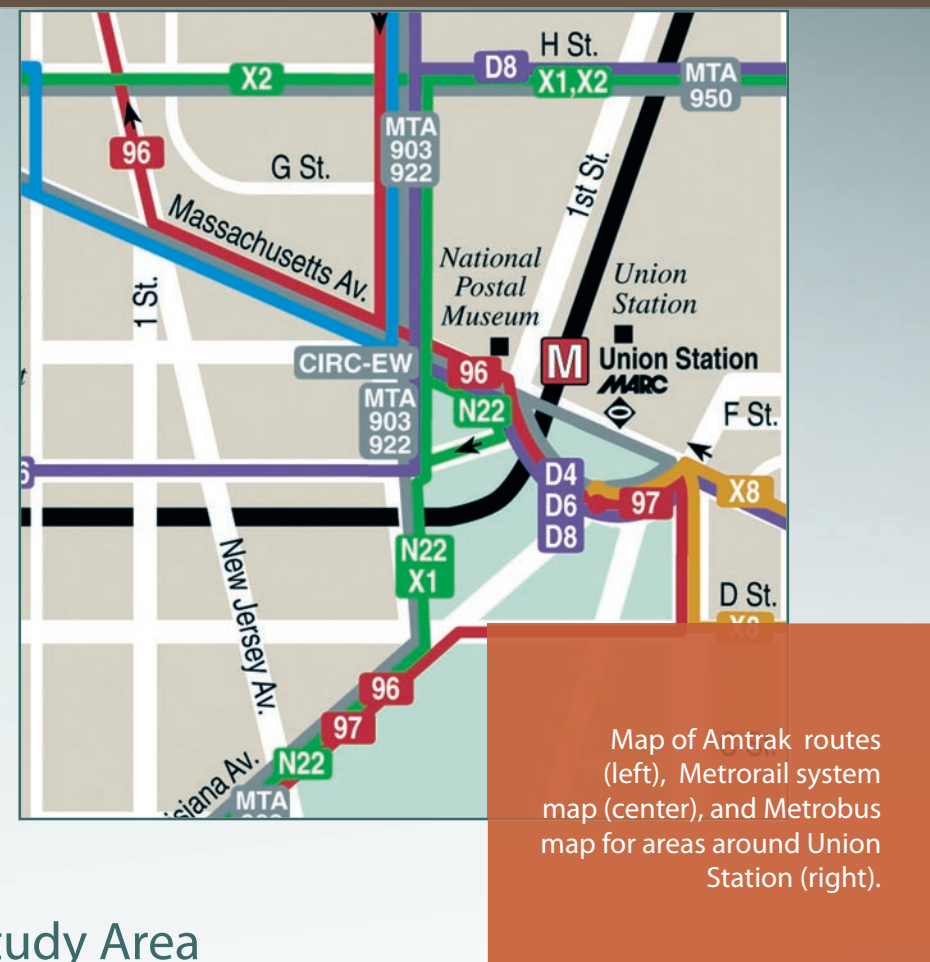
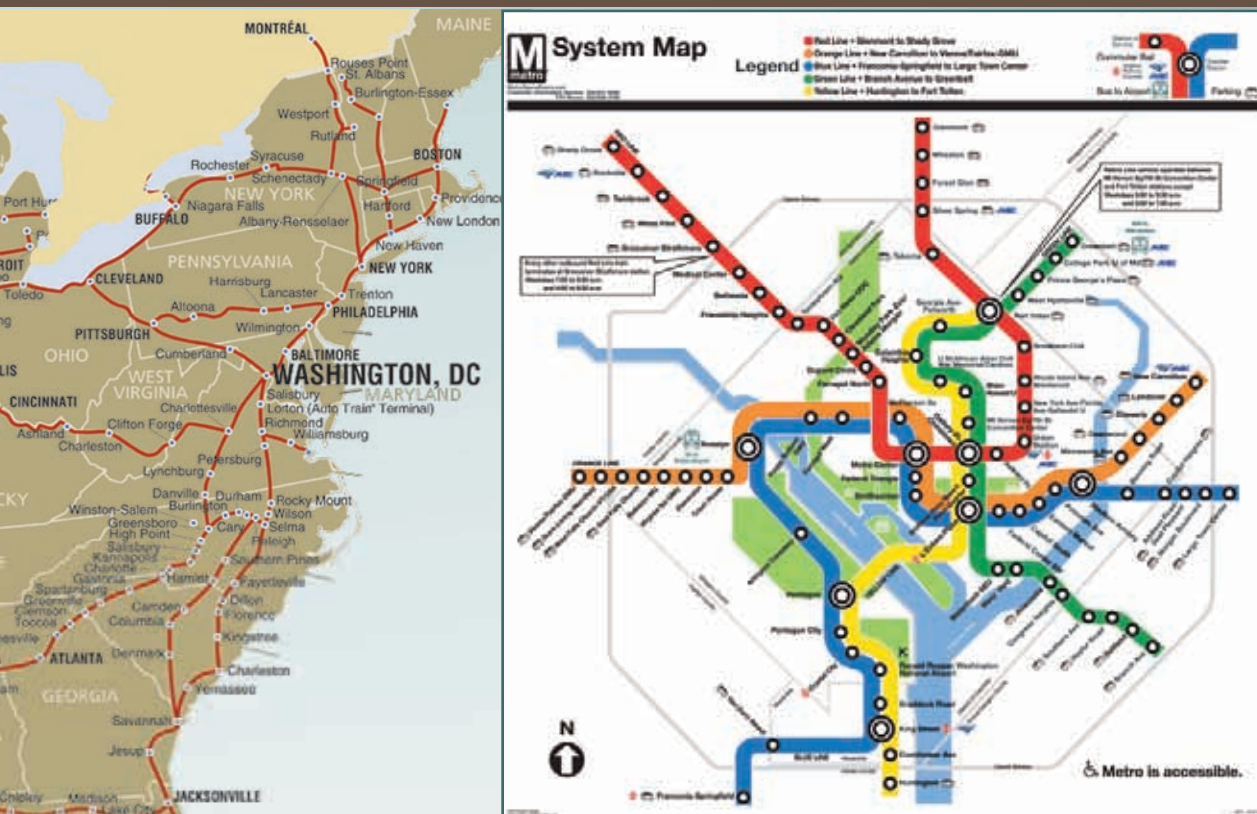
View inside the Headhouse circa 1920 (left), 1953 train crash in Union Station (center), and existing retail at Union Station (right).

Concern for the future of the station led to the creation of the Union Station Redevelopment Corporation (USRC), a non-profit corporation charged by Congress with protecting the federal government's interest in Union Station. The Redevelopment Act that created USRC sought "restoration and operation of a portion of the historic Union Station building as a rail passenger station,



together with holding facilities for charter, transit, and intercity buses in the Union Station complex."

Subsequently, a 1988 act of Congress completed the restoration and transformation into the Union Station of today, with retail occupying the terminal and transportation-related spaces along the north side of the historic building. The station houses the most retail shopping of any U.S. rail station and merchants have enjoyed annual sales of more than \$130 million, serving local and traveling shoppers from around the region.



2.2 Geographical and Regional Significance

Amtrak Route Map

Union Station is one of the key hubs in a passenger rail network that not only covers all of the United States but also extends into Canada. The station serves a multitude of passengers, from long distance travelers to local commuters. For travelers on the Northeast Corridor, Union Station is the south end of Amtrak’s Acela and Northeast Regional Train services, which served more than 850,000 riders in 2008. These services are attractive alternatives to air travel between cities in the Northeast. Additionally, intercity bus services operating just north of Union Station serve more than 3,500 riders a day traveling regionally and nationally.

For residents of the national capital region, Union Station is an essential part of a network of commuting services for more than 45,000 riders a day on commuter rail systems that cover three states (MD, VA and WV) and D.C. More than 34,000 people enter the Washington Metropolitan Area Transportation Authority’s (WMATA) Union Station Metrorail station every weekday to reach jobs and homes in Maryland, Virginia, and D.C.

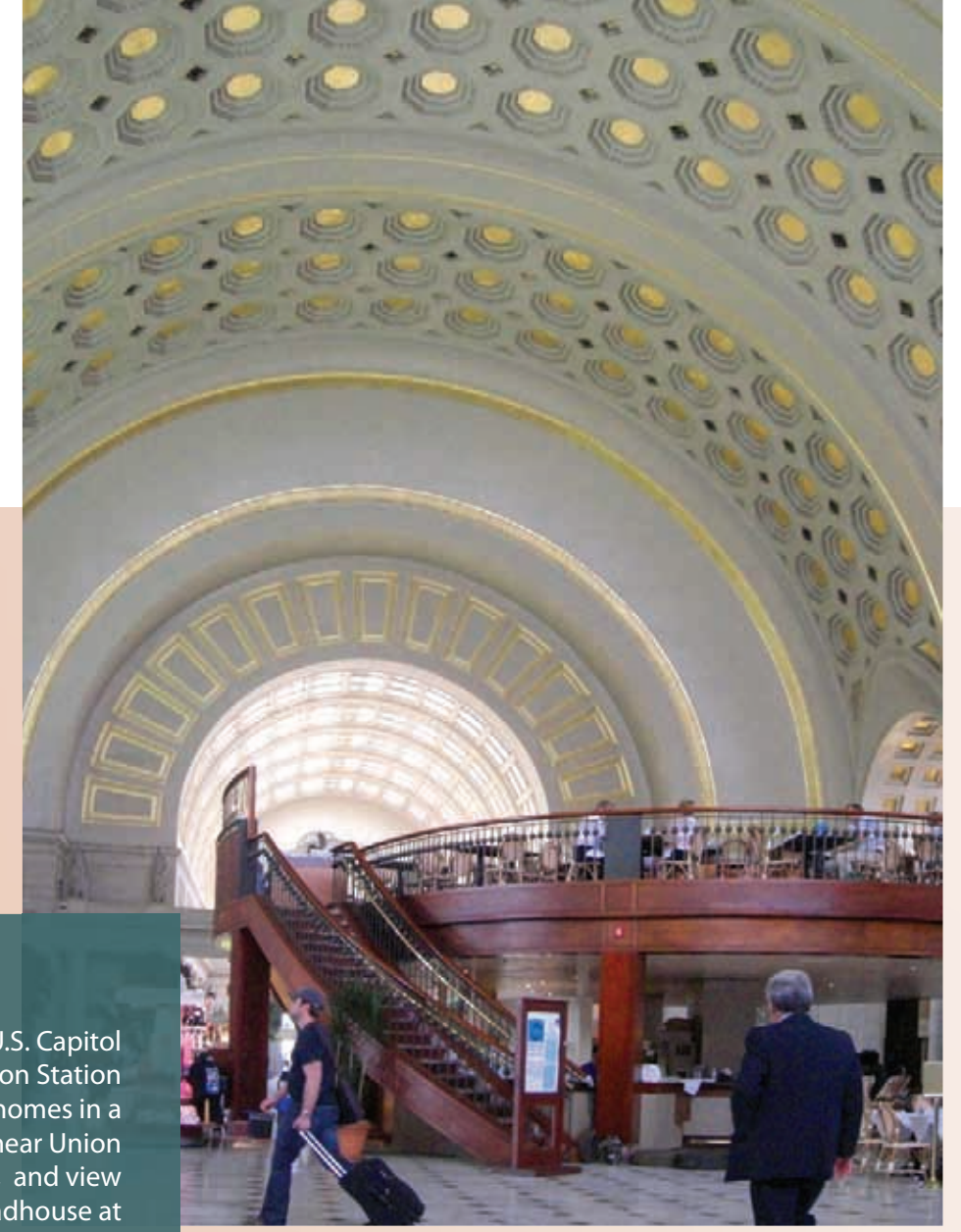
2.3 Study Area

Union Station is located in downtown D.C., situated north of Columbus Circle on Massachusetts Avenue and First Street NE, about one half-mile northeast of the U.S. Capitol.

The study area extends from Massachusetts Avenue on the south to Third Street NE on the east to M Street NE on the north to North Capitol Street on the west. **Figure 2-1** highlights the key features in the immediate vicinity of Union Station, including existing transportation facilities, proposed developments, and proposed transportation improvements.

The study area is located within the boundaries of Ward 6, Advisory Neighborhood Commission (ANC) 6C. Surrounding neighborhoods include the Union Station neighborhood, as well as NoMa, Stanton Park, and Near Northeast. Four distinct neighborhoods border the Union Station complex and the Union Station railroad tracks. These include:

- NoMa: Situated between Massachusetts Avenue to the south and New York Avenue to the north, the NoMa neighborhood is a redevelopment area that is focused on the New York Avenue Red Line Metrorail station. More than 20 million square feet of development is planned in the neighborhood over the next 15 years, including 8,000 residential units; 12,000 hotel rooms; 750,000 square feet of retail; and 10 million square feet of commercial office space.



View of the U.S. Capitol from Union Station (left), rowhomes in a neighborhood near Union Station (center), and view inside the Headhouse at Union Station (right).

- Near Northeast: A mix of light industrial and residential zoning typify this neighborhood. Development is generally one to two stories with town-homes and row homes comprising most of the housing stock.
- Stanton Park: The Stanton Park neighborhood is located due east of Union Station. In the study area, Stanton Park is composed primarily of row homes, although some commercial office space exists as the neighborhood moves closer to Capitol Hill.
- Capitol Hill: Capitol Hill consists of a mix of two to four story row homes and the U.S. Capitol complex, to which hundreds of thousands of staff arrive daily. A large portion of these employees arrive at Union Station via Metrorail, Metrobus, VRE, MARC, or Amtrak.

Developments in these neighborhoods, particularly NoMa, have and will continue to impact the demand for transit services at Union Station.

2.4 Physical Components of Union Station

The most widely recognized components of the Union Station complex are its original and historic Headhouse — or Main Hall, as it's better known — with 96-foot barrel-vaulted ceilings evenly interspersed with skylights; and the Historic Concourse, which is a smaller barrel-vaulted space immediately behind, or north of, the Headhouse, where three levels of retail and Amtrak ticket counters stand today. The modern Amtrak concourse is attached to, and located just north of, the Historic Concourse. Both the Headhouse and

the Historic Concourse currently contain retail and restaurant space, meeting rooms, and office space.

Other major components in the Union Station complex include:

- The parking garage with a bus/transit deck located on the lowest level
- Railroad tracks, platforms, and railroad service areas
- Columbus Plaza and Columbus Circle
- The H Street NE bridge located above the railroad tracks
- The partially completed North Pedestrian Walkway and H Street underpass located below the railroad tracks (two levels below the H Street overpass)

- WMATA's Union Station Metrorail station (Red Line)
- Air rights over the railroad tracks extending north to K Street

These components are shown in **Figure 2-2**.



2.5 Governance and Management

Several entities manage functions within the Union Station complex and in many cases, ownership and management are distinct. For instance, the historic components of Union Station, rail tracks, platforms, and service areas located on the property are owned by the federal government. The operations and maintenance of these facilities and areas are the responsibility of Amtrak, while management of these facilities is the responsibility of USRC. Additionally:

















- Union Station Investco, LLC, a private entity controlled by Ashkenazy Acquisition Corporation, oversees the interior commercial use of the Headhouse, Historic Concourse, and the Amtrak concourse.
- Jones Lang LaSalle Americas, Inc. is the property manager for the commercial use areas.
- Ticketing, railroad operations, and passenger accommodation areas are controlled by Amtrak.
- Union Station Parking Garage, LLC is a joint venture between Colonial Parking and E-Park to operate the Union Station parking garage, which includes the main-level deck used for tour bus parking and transit buses. The garage is owned by the U.S. Department of Transportation and leased by USRC.
- The H Street bridge is owned and maintained by DDOT.
- Columbus Plaza, in front (south) of the historic Union Station Headhouse, is owned and maintained by the National Park Service.
- Columbus Circle, including Massachusetts Avenue NE, is located on federally owned property, but is maintained by DDOT.
- WMATA operates and maintains its Metrorail Red Line station and tracks, and its related operations and maintenance spaces.
- The H Street NE tunnel (or underpass) is currently closed to the public and used by Amtrak for various station maintenance activities. The tunnel is under the jurisdiction of DDOT.
- The air rights above the railyard at Union Station have been purchased by Akridge, a local real estate development company.

3 Transportation Needs Assessment

3.1 Needs Assessment

Needs within the Union Station complex and immediately surrounding areas were identified through an iterative process that involved data collection and technical analysis, as well as coordination with DDOT, technical stakeholders, and the public. After completing an initial survey of the current transportation conditions in the study area (detailed in the next chapter), a series of design charrettes were held in October 2008 to brief the stakeholders on the issues that had been identified in the study of the transportation conditions. Using the input solicited at these charrettes, as well as information provided by stakeholders, a list of needs was defined. These needs correlate to the framework goals and planning principles defined in Chapter 1, as shown in **Table 3-1**, and are described in Chapter 3.2.

Table 3-1 Planning Framework Goals and Identified Needs

Framework Goals	Identified Needs							
								
Maintain and enhance Union Station as a multi-modal transportation hub.	●	●	●			●	●	●
Promote Union Station as a fluid pedestrian environment that supports comprehensive connectivity.	●		●	●	●	●	●	●
Ensure enhanced safety and security.	●	●	●	●			●	●
Respect the architectural, cultural, and regional significance of the historic Station		●	●		●	●		
<div><div> = Capacity requirements</div><div> = Modal connections</div><div> = Pedestrian connections</div><div> = Safety and Security</div><div> = Historic preservation and character</div><div> = Transit-supportive land use</div><div> = Circulation</div><div> = Signage</div></div>								

3.2 Identified Needs

3.2.1 Capacity Requirements

As Union Station continues to experience increases in passenger demand across all transportation modes, it will also face capacity constraints. As a result, it is necessary to analyze how general space requirements translate into sufficient space to accommodate a mix of standing, waiting, circulating, shopping, and sightseeing. Additional space, both vertically and horizontally, would allow for future flexibility with respect to capacity, as well as safety and security. For instance, the creation of a same level connection between the rail tracks and the Metrorail station (perpendicular to the north/south tracks) would support capacity, as well as safety and security goals. Bottlenecks are a frequent problem during peak hours when pedestrian traffic is heaviest. Adding capacity and alternate routes provides redundancies in routes and the ability to separate pedestrian flows, leading to improved safety and security conditions.

Additionally, rail capacity enhancements will address insufficiencies in the current rail facilities, including platforms, tracks, and other rail-travel-related equipment. If left unaddressed, these insufficiencies will hamper Union Station’s ability to accommodate growth projected in future years.



3.2.2 Modal Connections

To support the primary function of Union Station as a transportation hub, connections between travel modes need to be integrated, such that passenger transfer is efficient and effortless. While several modes pass near each other at Union Station, in many cases, the interchanges between these modes can be improved. Further, these modes require facilities and amenities to support future rider demand. For instance, intercity bus services are currently located offsite. However, the creation of an intercity bus terminal within the Union Station complex, complete with ticketing and operational space, would make connections to intercity buses much easier. Similarly, connecting the Metropolitan Branch Trail to Union Station would create a means for cyclists around the region to better access the station’s retail as well as the full range of travel modes at the station. Finally, connecting Union Station with an envisioned streetcar service along H Street would allow residents in the neighborhoods northeast of the station to enjoy a more direct connection with the attractions and multiple transit options found in and around the station.

Pedestrian congestion between MARC trains and Metro escalators (left) and Circulator bus departing Union Station parking garage toward the Bikestation and U.S. Capitol (right).



3.2.3 Pedestrian Connections

Because of heavy pedestrian traffic in and around Union Station created by passengers traveling to jobs and appointments in the NoMa and Capitol Hill neighborhoods, improved pedestrian connections are needed in several locations. These pedestrian connections can be made safer by separating pedestrian and vehicular traffic to alleviate conflicts between the two or by providing improved traffic controls to ensure pedestrian right-of-way and safety. Some needed improvements have been incorporated into the planned rehabilitation of Columbus Plaza and Columbus Circle, where distinctive paving will distinguish pedestrian walkways from bike paths and vehicular traffic. Other improvements are recommended to connect the station with proposed facilities on H Street, including the Burnham Place development and the streetcar system that is part of the Great Streets Program and H Street Rehabilitation efforts. Still, many more improved pedestrian connections have been identified and are needed, such as the Train Concourse Connector and improvements on First Street NE.

3.2.4 Safety and Security

Sufficient space; flexibility in the use and design of the space; and the ability to direct, cordon, and separate various uses are all aspects of station safety and security. Due to the prominence of Union Station and its relative accessibility and integration with adjacent land uses (as compared with airports), it is critical that high security standards be developed and maintained. Additionally, an Emergency Evacuation Plan is needed to address all of the above-named design concerns, as modes must allow travelers to access and egress the station efficiently and safely in emergency conditions, as well as during peak passenger flows.

Based on a study that assigned expected demand to designated evacuation networks around Union Station, New York Avenue, H Street, Pennsylvania Avenue SE and I-395 have been recommended for use in the event of an emergency evacuation of the station. These corridors should be addressed in the Emergency Evacuation Plan for vehicular egress of the station and the plan should also identify pedestrian evacuation routes within the station that avoid current bottlenecks and chokepoints.

In the meantime, external security measures have been incorporated into the planned improvements to Columbus Plaza and Columbus Circle including steel-filled bollards along the sidewalk parallel to the south entrance to Union Station.

3.2.5 Historic Character and Preservation

Having been in operation for more than 100 years, Union Station is historically relevant in the transportation network of both the region and nation. Given the station's redevelopment and reinvention over time from rail station to multimodal transportation hub, it is important to preserve as much of the historic building and its characteristic uses as possible. This means maintaining not only the historic structure, but also adjacent parcels, such that current and future growth demands are met while safeguarding the complex as an attractive destination for commuters and tourists alike.

3.2.6 Transit-Supportive Land Use Patterns

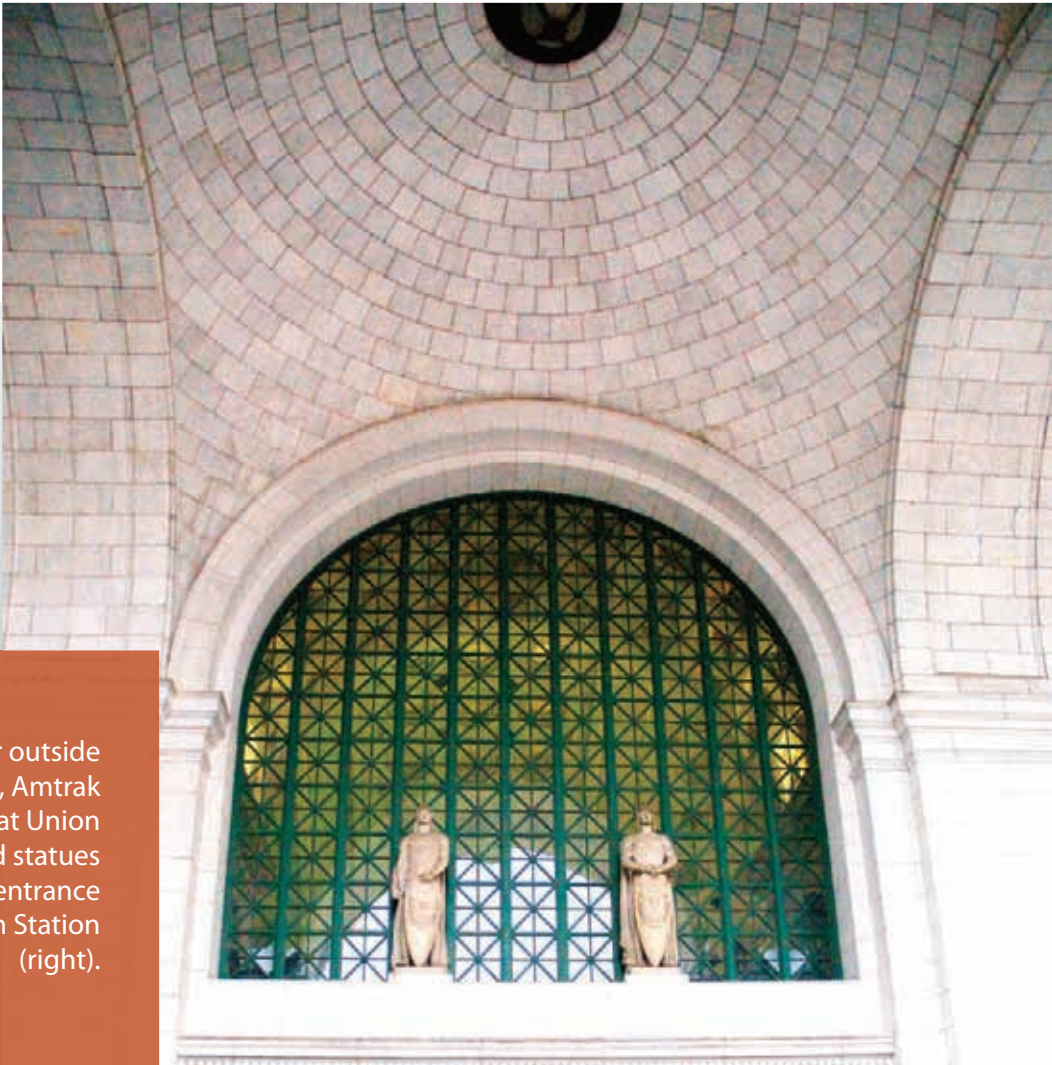
Transit-supportive land use patterns in the study area are necessary to maintain the Union Station complex as a friendly, walkable transportation hub that is part of the surrounding neighborhoods. Dense, clustered development, particularly mixed-use development, would allow improved patronage and utilization of the various transportation modes that characterize Union Station. Development should also support economic development goals both in the city and region, through attraction of local, regional, and tourist business. To help promote and direct transit-supportive land use patterns, guidelines for transit-oriented development in and around multi-modal transit centers should be developed and integrated into future station area planning and development.

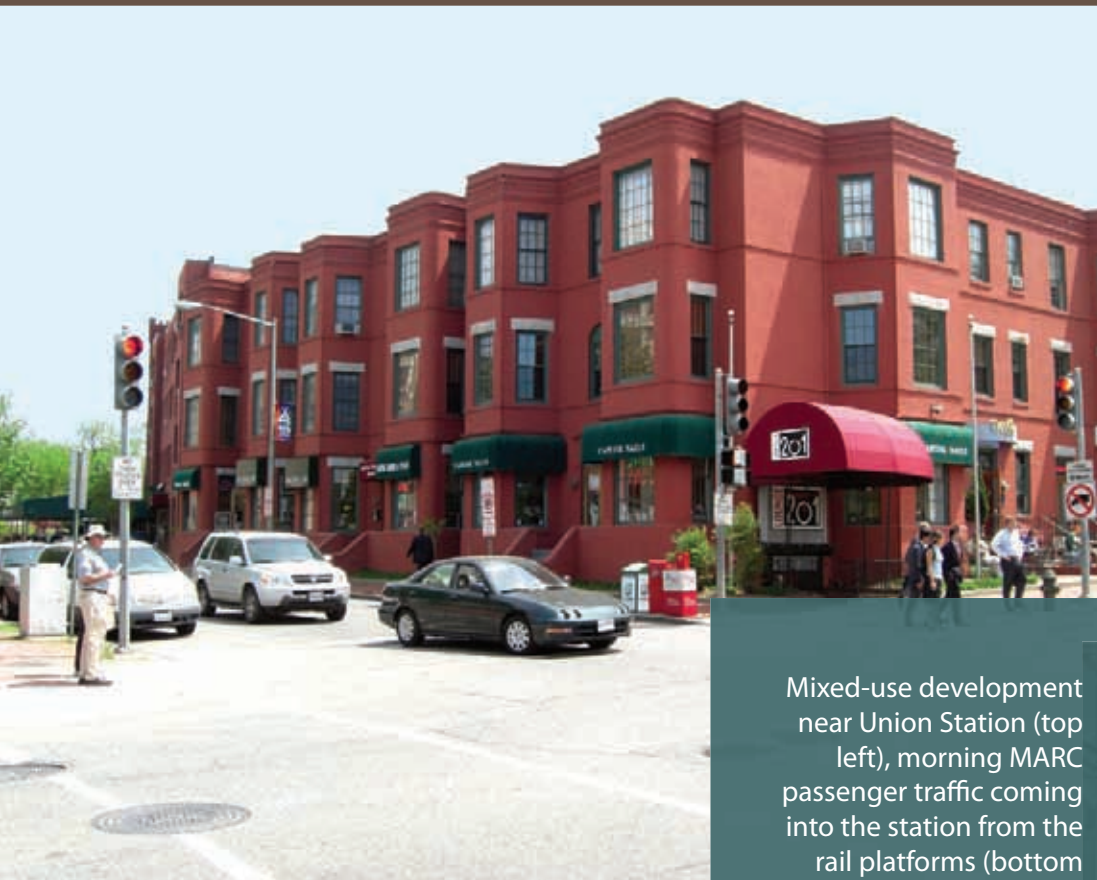
3.2.7 Circulation

Circulation needs directly impact efficient connections. Aspects of this efficiency include directness of routes, adequate signage, sufficient capacity, and separation of travel paths to avoid conflicting movements between pedestrians, bicycles, and motor vehicles. Station users require clearer and more direct circulation patterns to access multiple modes; currently these needs are evident from existing bottlenecks in the station complex. However,



Morning rush hour outside Union Station (left), Amtrak Police presence at Union Station (center) and statues over the front entrance doors at Union Station (right).





Mixed-use development near Union Station (top left), morning MARC passenger traffic coming into the station from the rail platforms (bottom left), and signage at Union Station (right).

improved capacity, pedestrian and modal connections, and a comprehensive signage program, will provide substantial circulation improvements in and around the station.

3.2.8 Signage and Wayfinding

Signage is an integral part of helping promote better circulation by providing direction and orientation to users of all modes of transportation. This is especially necessary at Union Station, as it suffers from limited external and internal directional signs that help visitors navigate through the expansive facility. Successful signage should provide enough information to help users find their way through a given space or system to a chosen destination. For instance, as passengers enter the station from the rail tracks, signage should immediately help orient them to where they are within the station and how to reach a given destination, whether a street, a service within the station, or another mode of transportation. Currently, it is very challenging for passengers to orient themselves to the station as they enter it from the tracks.



4 Existing Conditions

Note: All data in the chapters that follow reflects the available and most current information as of October 1, 2009.

4.1 Traffic

The roadway system adjacent to Union Station is a basic grid system with a limited number of major diagonal avenues. Most of the roadways in the study area are classified as collector roads, which serve the function of collecting traffic from smaller roads and land uses and feeding higher-classification roadways. The higher-classified roadways in the study area include North Capitol Street (principal arterial), H Street (principal arterial), Louisiana Avenue (principal arterial), Massachusetts Avenue (principal arterial west of North Capitol Street and minor arterial east of North Capitol Street), and E Street (minor arterial). According to DDOT, daily traffic volumes on roadways classified as arterial above and near the study area are:

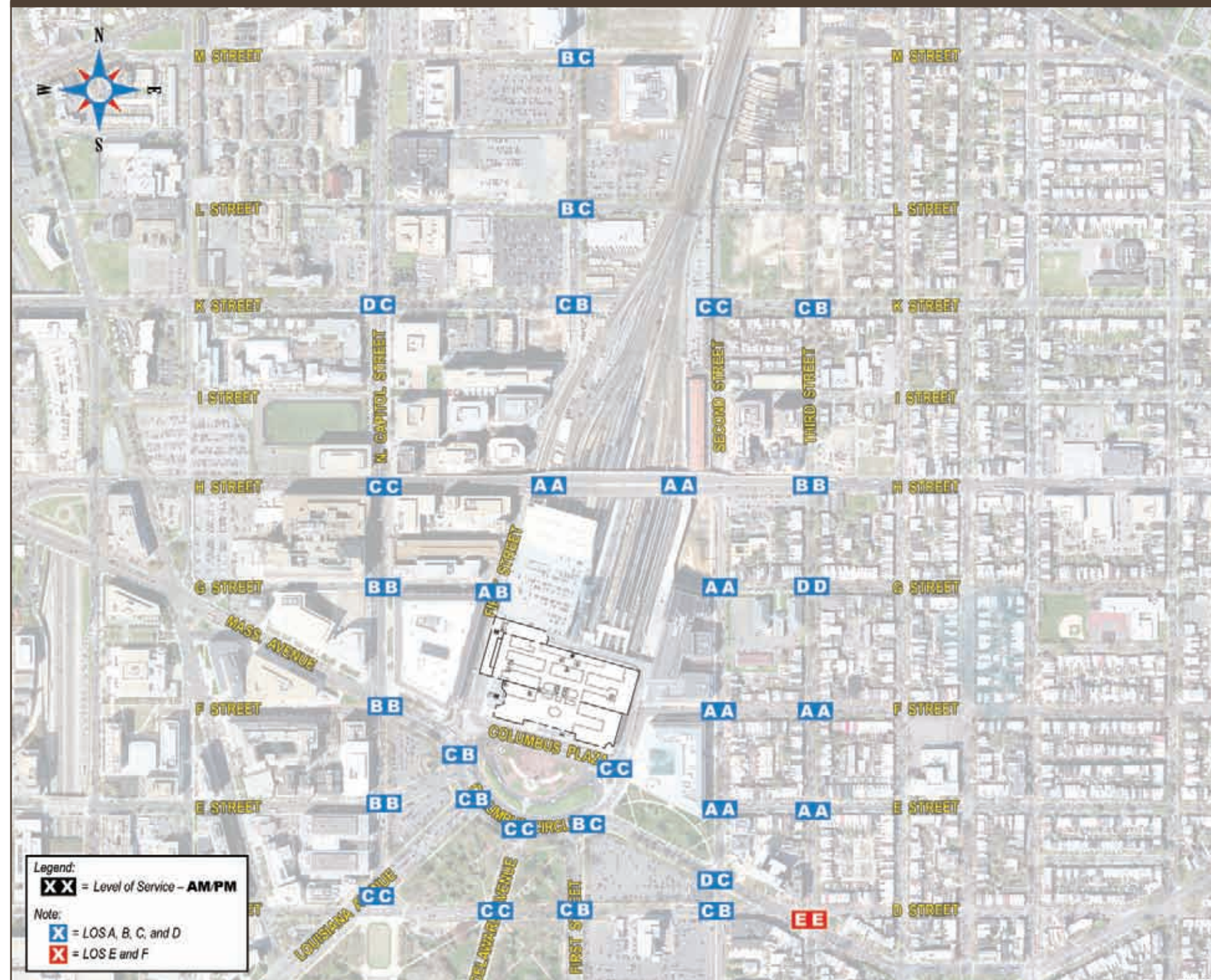
- North Capitol Street: 21,000 vehicles per day
- H Street: 27,000 vehicles per day
- Massachusetts Avenue: 23,000 vehicles per day
- Louisiana Avenue: 8,000 vehicles per day
- E Street: 11,000 vehicles per day
- Interstate 395: 48,000 vehicles per day
- Constitution Avenue: 21,000 vehicles per day

4.2 Existing Street Network

To support more detailed analysis of traffic operations, vehicular turning movement counts were conducted at 26 intersections within the study area. These traffic counts were conducted at each location for a consecutive 30-minute period between 7 a.m. and 9 a.m. and between 4 p.m. and 6 p.m. (coinciding with the morning and evening peak traffic flows). Data collection was conducted between March 11, 2008 and March 28, 2008 on various Tuesdays, Wednesdays, and Thursdays. Counts were taken on these mid-week days to best represent typical weekday traffic, when pre- and post-weekend traffic spikes are avoided. Within the study area, traffic flows demonstrate directional peaking, where inbound traffic is heavier in the morning peak and outbound traffic is heavier in the evening peak.

Figure 4-1 shows levels of service (LOS) at key intersections in the study area, as a standard traffic engineering method of grading roadway operations. LOS methodologies use a grading scale from A to F, with A representing excellent traffic flow with minimal delays, E representing operations at or near capacity, and F representing failure in traffic operations and very high levels of delay. In general, LOS D or better are considered desirable. The discussion below summarizes traffic volumes and operations during the morning and afternoon peak periods in the vicinity of Union Station.

Figure 4-1 Intersection Levels of Service



4.3 Circulation

Many different transportation modes are accommodated by the current circulation plans and patterns near Union Station, with varying levels of success. The schematic in **Figure 4-2** illustrates typical circulation patterns outside Union Station; in it, there is a particular focus on circulation through both Columbus Circle and Columbus Plaza. LOS and traffic operations are a particular concern in this area as travel demand in Union Station grows and development near the station ensues. However, circulation issues around the station currently relate more to the somewhat confusing and indirect travel patterns than to high levels of peak-period traffic congestion. It can be anticipated that these issues will amplify over time, unless improvements are made to the infrastructure to enable better traffic flow.

Vehicular access to Columbus Plaza is currently gained via an inlet on the east side of Columbus Circle. Once inside the plaza, three lanes are available for use by various transportation modes. The lane closest to the station is reserved for taxis, the middle lane is for passenger pick-up and drop-off by the general public, and the lane furthest from the station is used by buses and for traffic going through and bypassing the passenger pick-up area. The most common path for egress for passenger cars and taxis requires completing the interior loop around the plaza, exiting at the east end, and then joining westbound traffic on Columbus Circle to Massachusetts Avenue.

A bi-directional circulation road, used by all forms of vehicular traffic, surrounds the west, north, and east sides of Union Station, and provides access to the parking garage north of the station, as well as to First Street NE, just west of the station. The circulation road can be accessed where Columbus Plaza separates from Columbus Circle, on the east side of the station; on the west side, it can be accessed from Columbus Plaza near the southwest corner of Union Station; and north side access can be gained directly from the parking garage. Columbus Circle continues past the point where Columbus Plaza and the circulation road separate and leads directly into eastbound F Street NE.

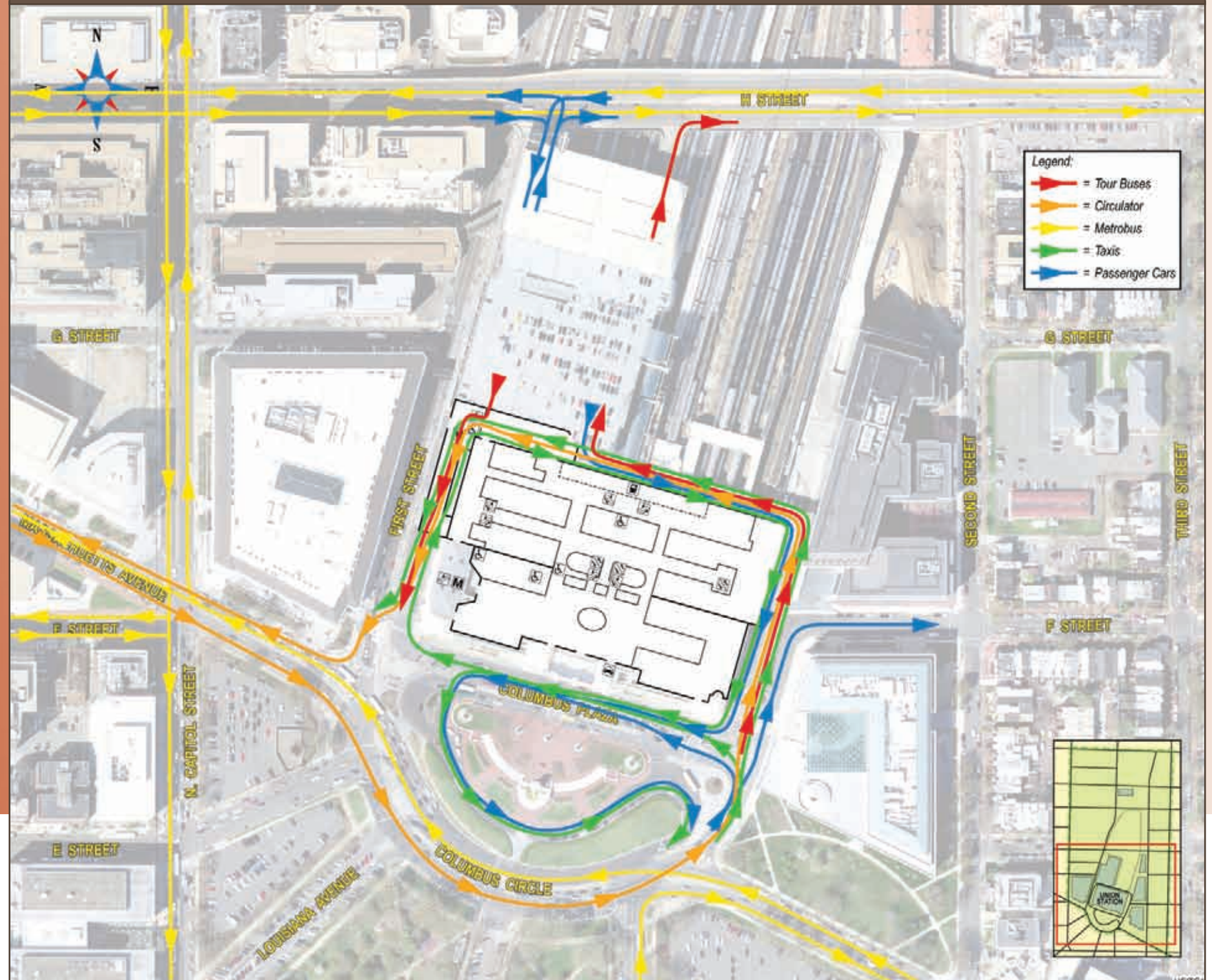
Morning Peak

During the morning peak hours, H Street, Massachusetts Avenue/Columbus Circle, and North Capitol Street carry the heaviest traffic through the study area with peak-hour volumes in excess of 1,000 vehicles per hour. Traffic flow is heaviest in the southbound direction along North Capitol Street and in the westbound direction along H Street and Massachusetts Avenue/Columbus Circle. The LOS results show that intersections along the high-volume corridors generally operate at LOS B or C during the morning peak.

Afternoon Peak

During the afternoon peak, H Street, Massachusetts Avenue/Columbus Circle, and North Capitol Street carry the heaviest traffic through the study area with peak-hour volumes in excess of 1,000 vehicles per hour along the major corridors; however, the travel direction is the reverse of what is experienced in the morning peak period, as traffic flow is heaviest in the northbound direction along North Capitol Street and in the eastbound direction along H Street and Massachusetts Avenue/Columbus Circle. The operational analysis for afternoon peak conditions shows that intersections along the high-volume corridors

Figure 4-2 Typical Vehicular Circulation Patterns



generally operate at LOS B or C, though slightly better than the morning peak conditions, primarily due to overall lower-traffic volume.

4.4 Parking

Parking is an integral feature for many modes of transportation at Union Station. Garage spaces, short-term waiting areas for taxis, and layover locations for buses are all needs associated with parking. Currently the parking at Union Station enables longer-term parking for those taking trains out of D.C.; mid-term parking for those using Union Station as the origin for their travel within D.C.; shorter-term parking for those visiting the shops, restaurants, and movie theater in Union Station; and immediate-term holdover parking for taxis, buses, and deliveries.

The predominant parking facility at Union Station is the parking garage located directly north of the station. The garage is a five-level structure with the four upper floors designated for passenger vehicles and the lowest floor reserved for buses. Its total capacity is 2,194 parking spaces, 90 of which are bus spaces. The garage is open to the public and offers a reduced fare to Union Station patrons with validated tickets.

Parking data provided by USRC shows that the parking garage experiences an overall average occupancy rate of 77 percent (leaving 505 spaces available) during a typical week. Its highest parking volume currently occurs on Wednesdays, with an average occupancy rate of about 83 percent (373 available spaces). Conversely, the Union Station parking garage experiences

its lowest parking volume on Mondays, with an average occupancy rate of about 66 percent (746 available spaces). Passenger car parking does not show any significant seasonal trends; the parking garage is accessed about 49,600 times per month, or about 1,600 times per day. Bus parking, on the other hand, experiences a dramatic increase during the spring tourist season.

Additionally, on-street parking is currently available near Union Station, with metered parking available on Columbus Plaza and First Street, as well as many other streets in the study area, most with two-hour limits (the Columbus Plaza rehabilitation project, however, includes planned removal of meters). Unmetered parking is available, predominantly on residential streets such as Second and Third Streets, also with a two-hour limit, unless a Zone 6 resident parking permit is provided. In total, on-street parking, which is illustrated in **Figure 4-3**, provides about 440 metered parking spaces and about 570 non-metered parking spaces within the study area. The non-metered spaces total approximately 330 resident permit spaces and 240 other spaces found in loading zones, school zones where parking may be restricted on school days, and other zones where parking is not permitted during busy traffic periods. Additionally, just south of the study area, nearly 350 street parking spaces are available to special permit holders.

4.5 Pedestrian Activity

4.5.1 ADA Issues

Outside of Union Station, some features in the nearby area make navigation difficult for those with physical disabilities. For instance, curb ramps are currently of poor quality, with narrow, ill-aligned passages and inadequate markings and in some places, uneven paving on and around the ramps. Additionally, many of the curb-cuts are old, although those within and around Columbus Circle will be improved during the upcoming rehabilitation.

Inside Union Station, on the main level, the floor is level from station entrances to the rail gates. However, between levels, narrow escalators make circulation challenging for those with mobility aids. There are also ten elevators within the station, but only four are accessible to the public; the others are private and serve Amtrak offices and baggage transport. These limited facilities may pose a

risk in the event of an emergency situation and it is critical that ADA issues such as these are considered when planning for emergency egress.

In February 2009, AMTRAK released “A Report on Accessibility and Compliance with the Americans with Disabilities Act of 1990 (ADA),” indicating planning, design, and construction work is underway in D.C. to improve ADA compliance, as well as customer service. Thus far, Amtrak has made its ticketing kiosks ADA compliant and offers electric cart service to help passengers with limited mobility access trains at Union Station.

4.5.2 External Pedestrian Movements

Pedestrians are constantly moving in and around Union Station and their trips include shifts between modes as they travel through the station and the surrounding area. Some of the existing issues related to pedestrian travel in Union Station result from mixing different types of foot traffic. For example, there is concentrated, highly directional, and relatively fast pedestrian traffic in peak periods, as commuters make their way to and from work; while other patrons, such as shoppers and Amtrak passengers, move at a more leisurely pace.

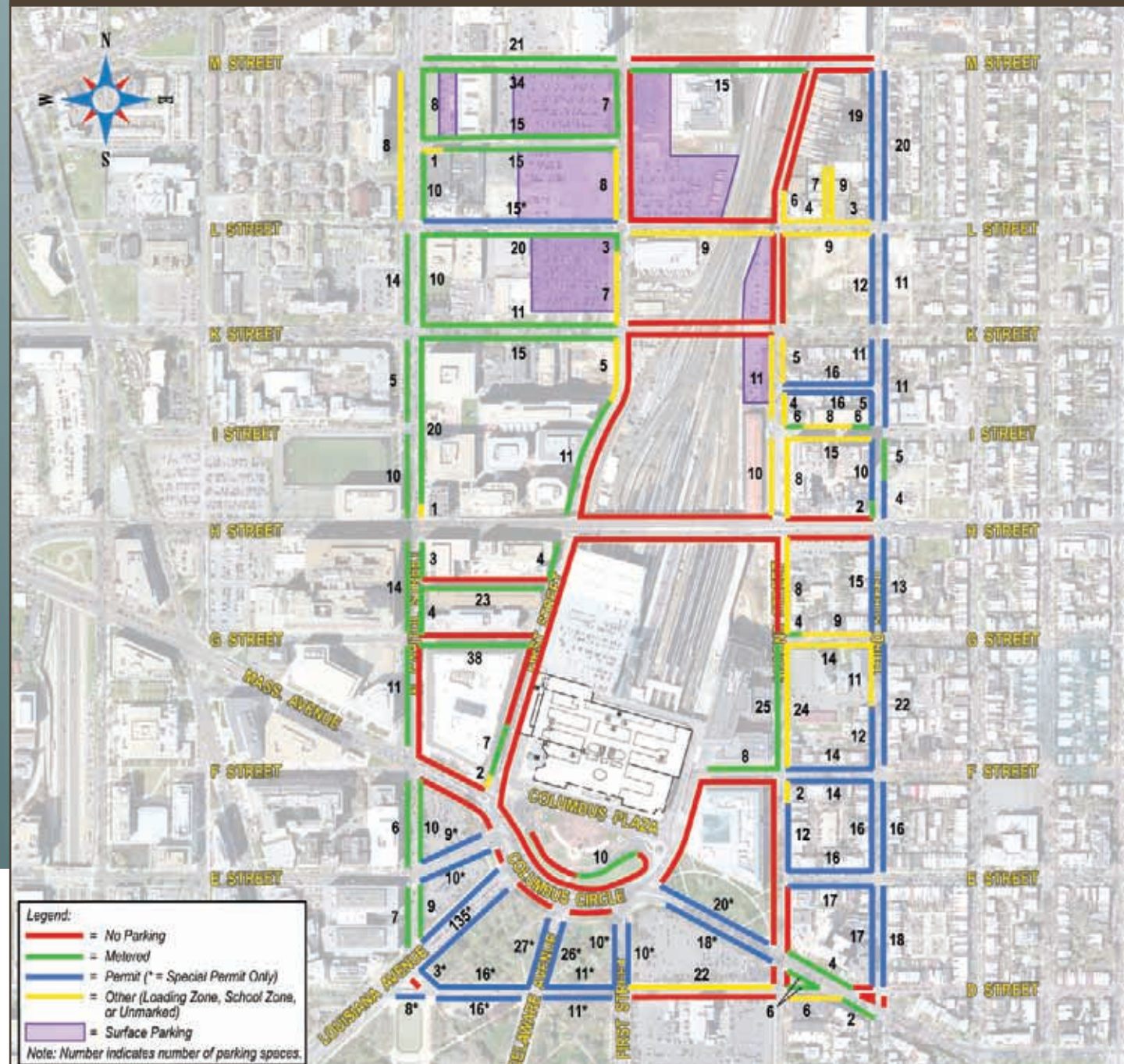
Morning peak periods typically experience pedestrian flows moving away from Union Station in nearly all directions; this trend is reversed in the evening rush period. Delaware Avenue and the western portion of First Street NE are the two most heavily utilized pedestrian routes.



Car exiting the Union Station parking garage (bottom left), pedestrian traffic walking toward Union Station (below), and a passenger using an Amtrak ticketing kiosk (bottom right).



Figure 4-3 On-Street Parking in the Vicinity of Union Station



Massachusetts Avenue (in both directions) and E Street NE also carry significant pedestrian volumes in the morning. Delaware Avenue and the other streets south of Union Station experience considerable foot traffic in the afternoon, as pedestrians return to the station from the Capitol Hill area. Two locations where patterns are opposite the morning-outbound/evening-inbound trend are the sidewalks along F Street NE and the Thurgood Marshall Federal Judiciary Building north of Massachusetts Avenue. In the morning, both of these paths carry pedestrian traffic from the residential areas east of the

station to the station itself and employment areas beyond; later in the evening the trends reverse, though the paths along the Thurgood Marshall Building remain heavily traveled throughout the day.

The schematic diagrams in **Figures 4-5** and **4-6** illustrate some of the major flow paths and highlight some of the potential areas of pedestrian congestion internal to Union Station.

Figure 4-4 shows pedestrian counts that highlight the heavy pedestrian flows on First Street NE, in both directions on Massachusetts Avenue and to/from E Street.

In an emergency situation, all known conflicts between pedestrian traffic and vehicular transportation outside the station will be exacerbated, as modes attempt to egress using the same space. These heightened conflicts should be anticipated and addressed in an Emergency Evacuation Plan.

4.5.3 Internal Pedestrian Movements

Inside Union Station, pedestrian movements may appear somewhat random at first glance, but distinct patterns can be discerned upon closer examination. A significant portion of pedestrian traffic within Union Station occurs in waves, as foot traffic comes off VRE, MARC and Amtrak trains and Metrorail. Smaller groups of people coming from tour buses also move through the station, albeit with patterns that are much more sporadic than those of commuters. These waves in pedestrian traffic may range in size from 20 to 50 people from a tour bus, to well over 200 from a commuter or intercity train. Tour groups also create pedestrian traffic waves. Predictably, the majority of commuters go toward First Street, Massachusetts Avenue, or the U.S. Capitol, while tour groups move



Pedestrian and bus traffic east of Union Station (above) and pedestrians leaving Union Station to catch Metrobuses (below).

Internal Conflicts

Though passageways become congested with high pedestrian densities when groups of people move through the station, significant issues arise when the mass of people encounters choke points within the station. Common bottlenecks inside Union Station include escalators and stairways, merge points for groups of unloading train passengers, and passageways blocked by idle tour groups or queued passengers.



Figure 4-4 One-Hour Pedestrian Volumes on Roads Adjacent to Union Station

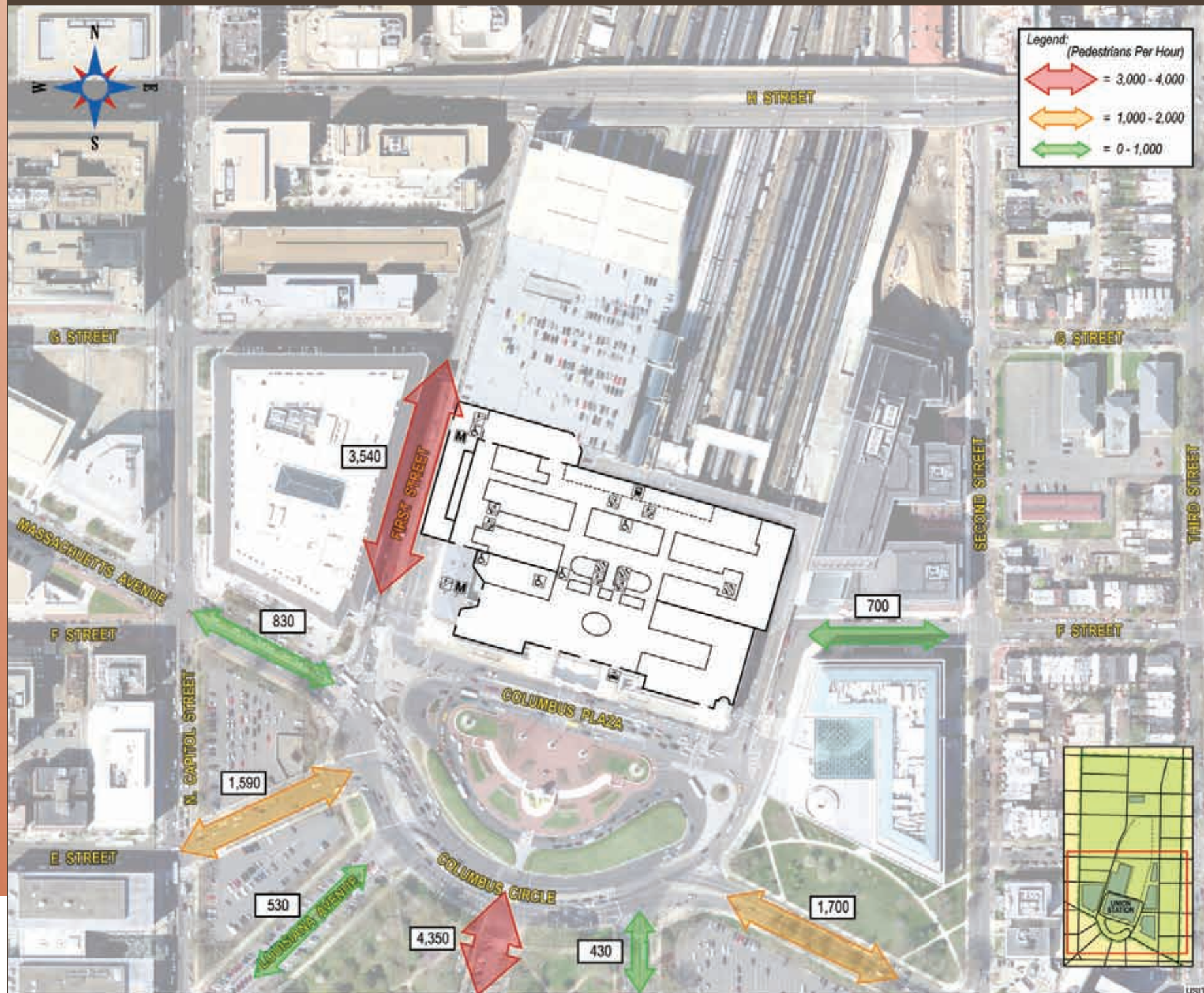


Figure 4-5 Morning Rush Period Pedestrian Paths

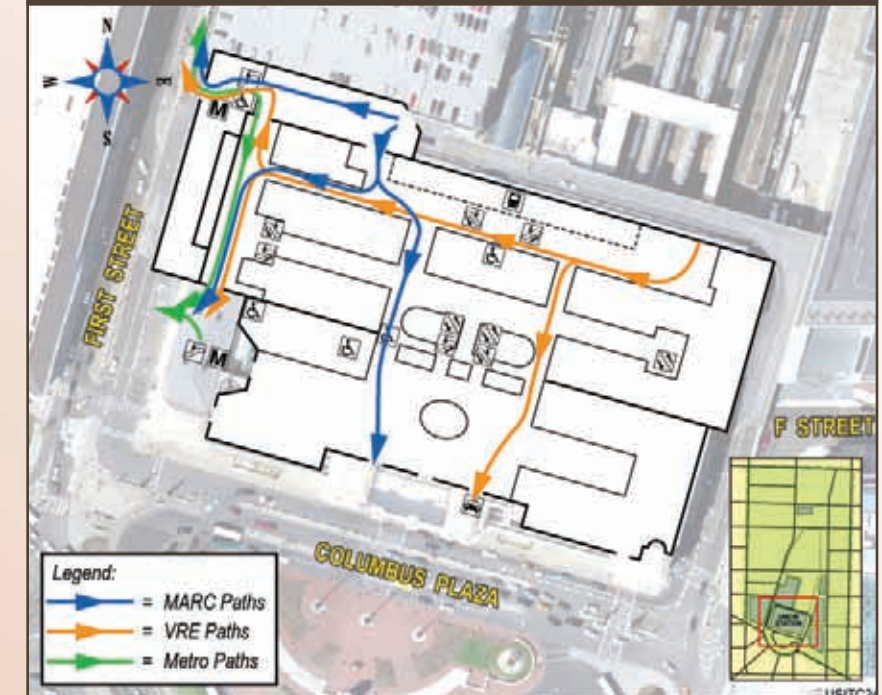
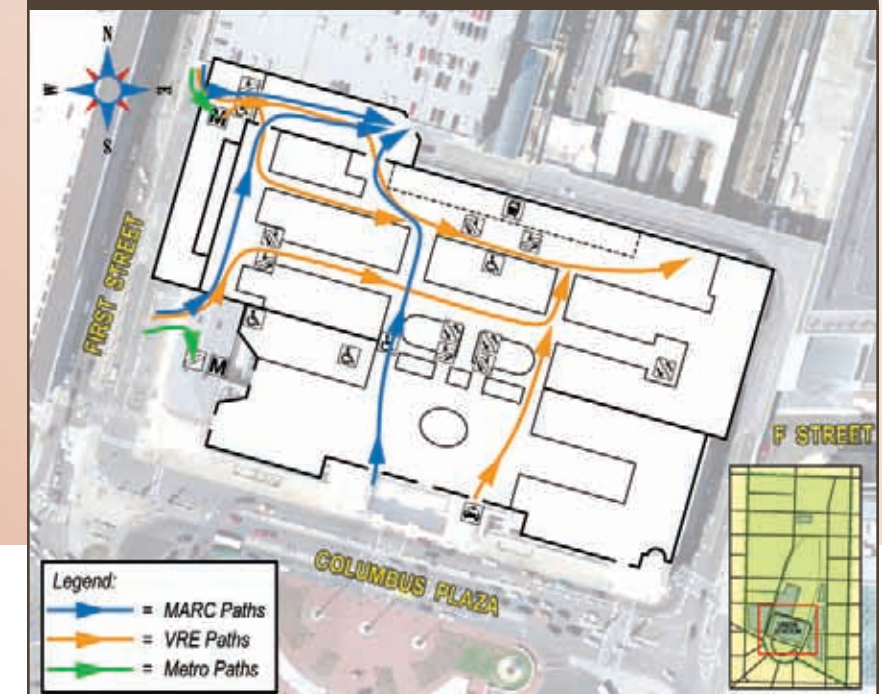
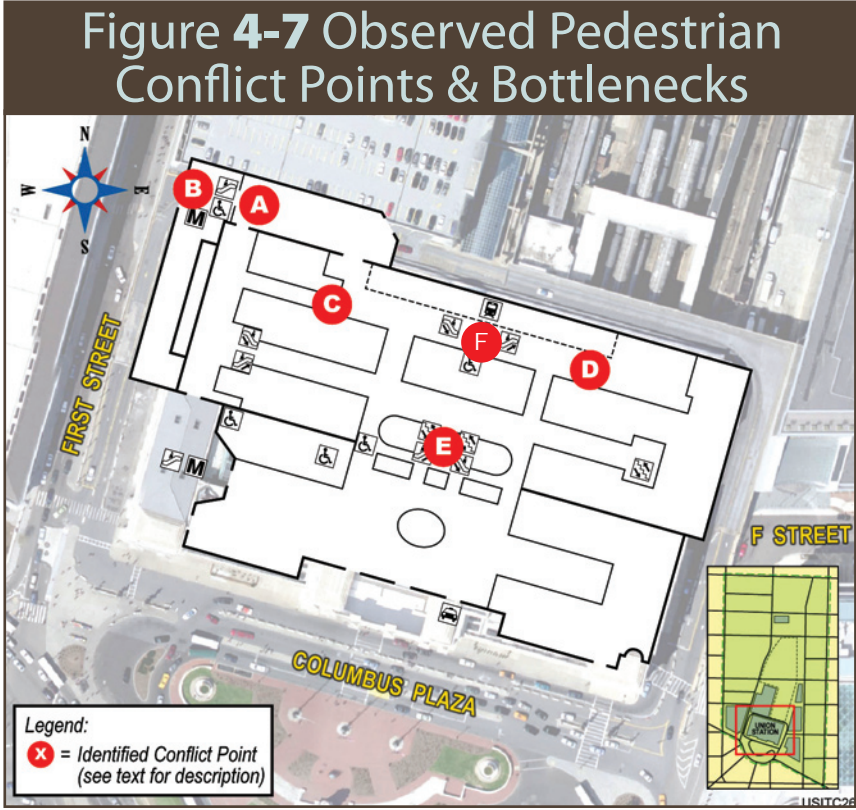


Figure 4-6 Evening Rush Period Pedestrian Paths



The observed pedestrian flow conflicts and choke points within Union Station throughout the day are shown in **Figure 4-7** and illustrated in the photos to the right, They include:

- Location A - Escalators to North Metrorail
- Location B - Escalators from North Metrorail
- Location C - Main East-West Corridor West End
- Location D - Main East-West Corridor East End
- Location E - Access to Food Court
- Location F - Northern End of Mezzanine Level



Union Station has an Emergency Evacuation Plan that is managed by a Station Action Team (SAT). The SAT is comprised of Amtrak, USRC, Jones Lang LaSalle, WMATA, and the Metropolitan Police Department.

In the event of an emergency situation, previously observed bottlenecks and choke points within Union Station pose a serious risk to pedestrian safety. It is standard procedure, in an emergency, for the building alarm to sound within the station, then for police and contract security to evacuate the building. In these conditions, it is especially challenging that the majority of pedestrian traffic will exit the station south toward the Capitol, as in the event of an emergency at the Capitol, evacuation plans direct



pedestrians north toward Union Station. While emergency events at both locations are unlikely through natural circumstances, such as fire or flood, a terrorist event in the vicinity of either would likely create chaos instead of ordered evacuation.

Given this, it is critical to improve emergency access and egress, both to and from rail platforms, as well as to and from the station as a whole. Currently, in the event of an emergency, platforms are evacuated back through Union Station and out to Columbus Plaza. However, should something happen within the station, an alternate route needs to be identified. **Figure 6-9** in Chapter 6 illustrates the existing and proposed exits at Union Station that could be utilized in an emergency situation.

The realization of recommended improvements to existing facilities at Union Station (as detailed in Chapter 6) would mitigate a number of internal conflicts, by providing new means of pedestrian circulation and egress. For instance, creating emergency access from rail platforms to the H Street tunnel would direct more foot traffic north and alleviate some of the concern of southbound congestion. Building the North-South Concourse, as well as the North Pedestrian Walkway and the Rail Concourse Connector Tunnel, would double the existing evacuation opportunities, as well as provide much needed pedestrian connections between transportation modes and between Union Station and First and H Streets.

4.6 Transportation Modes at Union Station

To provide a snapshot of the audience served by various transportation modes at Union Station, it is important to point out that the station is part of a transportation network that includes the nation's fifth largest bus system (Metrobus) and its second largest rail transit system (Metrorail). These systems serve a population of 3.5 million people in a 1,500-square-mile area. According to the Metropolitan Washington Council of Governments, forty-two percent of those who work in D.C.'s central core (and parts of Arlington) use these systems to commute to and from work. Given these conditions, it is necessary to explore the existing conditions found across transportation modes at Union Station, as modes are connected by ridership and can anticipate similar needs as transportation demands continue to grow, both in D.C. and the region. **Table 4-1** provides a snapshot of the transportation modes served by Union Station.

Table 4-1 Transportation Modes at Union Station

MODE	FACILITIES	OPERATIONS	RIDERSHIP	CONTEXT
Bicycles	A Bikestation has recently been constructed at Union Station that includes sheltered parking for approximately 150 bicycles.	The Bikestation facility will include bicycle repair, rentals, and accessories for sale.	Data collected around Union Station showed as many as 20 to 30 bikes per hour headed toward the station and up to 40 per hour moving away from the station.	Proposed bike-friendly improvements near Union Station include bike lanes along Massachusetts Avenue, and connecting the Metropolitan Branch Trail to First Street.
Metrobus	Major bus stop and layover space exists in Columbus Plaza. Other highly utilized facilities in the study area include Columbus Circle and North Capitol Street.	Operated by WMATA, Metrobus provides service throughout the day, with significant increases during peak commuting times. At off peak times, buses dwell, or wait, at Columbus Plaza before returning to service.	There are 13 major D.C. Metrobus routes that stop near Union Station. The majority of these routes see over 100,000 riders in a normal workweek and most buses that service both H Street and Union Station have been observed to have higher ridership near the station.	Currently, morning peak operations require 591 buses of the Metrobus fleet, while the afternoon peak requires 571. However, during midday, the number of buses required to run routes dips to 275.
D.C. Circulator	D.C. Circulator buses use Metrobus stops to load and unload passengers.	The D.C. Circulator service consists of five routes. Service runs from 7 a.m. to 9 p.m. during the week, with a scheduled headway of 10 minutes throughout the day.	Ridership on the D.C. Circulator increases noticeably during peak periods. The Union Station to Georgetown line is the most heavily used of its three routes, with more than 155,000 trips and approximately 6,200 daily riders in April 2008.	The Circulator’s sole function is to move people within the core of the city.
Commuter Bus	Union Station has no facilities dedicated exclusively to commuter bus services. Services to Union Station, therefore, use public space areas outside of the Union Station complex.	Five commuter bus operations service the study area: Maryland Transit Administration (MTA Maryland) has 60 commuter bus runs; Potomac and Rappahannock Transportation Commission (PRTC) OmniRide has two bus runs; Loudoun County (LC) has 43 commuter bus runs; Quick’s Bus Company has two bus runs; Shenandoah Valley- Valley Connector (VC) has one bus run.	Conventional peak traffic periods see the vast majority of commuter bus volumes, while activity tapers off during midday. Detailed ridership of commuter buses was not available specifically at Union Station. However, broad level estimates show that the average commuter bus servicing Union Station is half to three quarters full on any given day of the week.	Commuter buses cater to a market segment different from local city buses or intercity buses, bringing in commuters from various suburbs surrounding D.C. over longer distances, with buses that are optimized for infrequent boardings and alightings.
Tour Bus	The 1981 Redevelopment Act for the rehabilitation of the Union Station complex provided for the inclusion of 95 spaces for tour buses on the first level of the Union Station parking garage.	Although some tour buses begin and end service at Union Station, most buses use the facility as a waystation to allow tourists to eat and shop at Union Station.	Tour and commuter bus population observations near down-town D.C. on May 15, 2008, totaled 501 tour or commuter buses and 64 school buses.	Observations have shown that tour bus populations peak during the spring months, which includes the popular Cherry Blossom Festival.
Intercity Bus	Intercity bus lines operate from a facility a half mile north of the main Union Station complex at First Street and L Street NE. Greyhound is in discussions with USRC regarding relocation of the operations facility closer to Union Station.	Intercity bus service to and from the study area is provided by Greyhound and Peter Pan Bus lines. Buses arrive 24 hours a day, with headways of approximately 30 minutes. The depot handles more than 60 buses per day. Service declines during nighttime hours.	Daily Greyhound ridership in the District is estimated at around 3,500 passengers.	Although intercity bus ridership to the D.C. area is increasing, benefits from the increase may be limited for Union Station — despite serving passengers with many of the same characteristics and needs as Amtrak passengers — due to the remote location of the bus depot.
Streetcar	In D.C., streetcar track is being laid along the H Street corridor. It is possible to extend this track along H Street to the west side of Union Station, but planning for the streetcar would require creating a maintenance facility, streetcar turnback, and platforms.	Operation of the proposed streetcar has not yet begun, as construction is not complete.	Ridership for the streetcar would likely come from existing commuters who currently utilize an alternate mode of transit.	The streetcar track is being laid as a component of a larger H Street redevelopment program. Streetcars are desirable because they use lighter and faster construction techniques than similar, higher-capacity light rail service and generally have higher ridership than comparable bus services.
Metrorail	Union Station’s Metrorail station is located below the station’s lower level, along the west side of the building next to First Street NE. It has three connections to Union Station: an outdoor entrance in the southwest corner of Union Station, with escalators from street level leading to the Metrorail station mezzanine level; an entrance from Union Station’s lower level, connecting to the same mezzanine level as the entrance above; an entrance at the northwest corner of Union Station’s main level.	Metrorail is operated by WMATA. From Union Station, the Red Line extends west and northwest toward Gaithersburg, Maryland; and northeast toward Glenmont, Maryland. This line runs up to 25 trains in either direction during peak periods.	Approximately 34,000 trips on the Metrorail system originate at Union Station every day; at least 3,350 and 3,850 people per hour, in morning and evening, respectively, board a Metrorail train at Union Station. Likewise, at least 4,150 people alight from a Metrorail train in the morning peak hour and at least 3,500 in the evening peak hour.	While only served by the Red Line, Union Station maintains the distinction of being the highest-volume station in the Metrorail system.
Commuter Rail	MARC trains serve both high- and low-level platforms and operate from the westernmost tracks. VRE trains operate from the easternmost tracks, which are low-platform tracks.	Commuter rail service at Union Station is provided by two separate services, MARC and VRE.	More than 30,500 riders use the MARC system on an aver-age weekday, while over 15,000 riders use the VRE system on an average weekday.	By their nature, commuter trains, like commuter buses, operate with distinct work-based peak periods, bringing people into D.C. in the morning, and taking them back home in the evening.
Intercity Rail	Amtrak trains share both high- and low-level platforms, throughout the 20 available tracks at Union Station, with MARC and VRE trains.	Long distance rail service from Union Station is provided by Amtrak, whose service is more evenly distributed than the distinct morning and evening peaks of commuter rail.	Approximately 85 Amtrak trains arrive and depart each day at Union Station; however, ridership is difficult to measure as each train has a different number of cars with a different number of seats.	Based on schedule and ridership, Amtrak service is much more similar to airline service than commuter rail service.
Taxi/Motor Vehicles	Columbus Plaza and the traffic lanes/ramps leading to the Union Station parking garage are the primary facilities for taxis and motor vehicles.	There are 120 registered taxi cab companies representing over 8,000 cabs in District of Columbia. Of that 8,000, 2,000 serve Union Station per day.	Over 2,000 taxis per day travel to and from Union Station.	Improvements to Coumbus Plaza are planned as part of a rehabilitation project and improvements to the north taxi lane are recommended as part of this study.

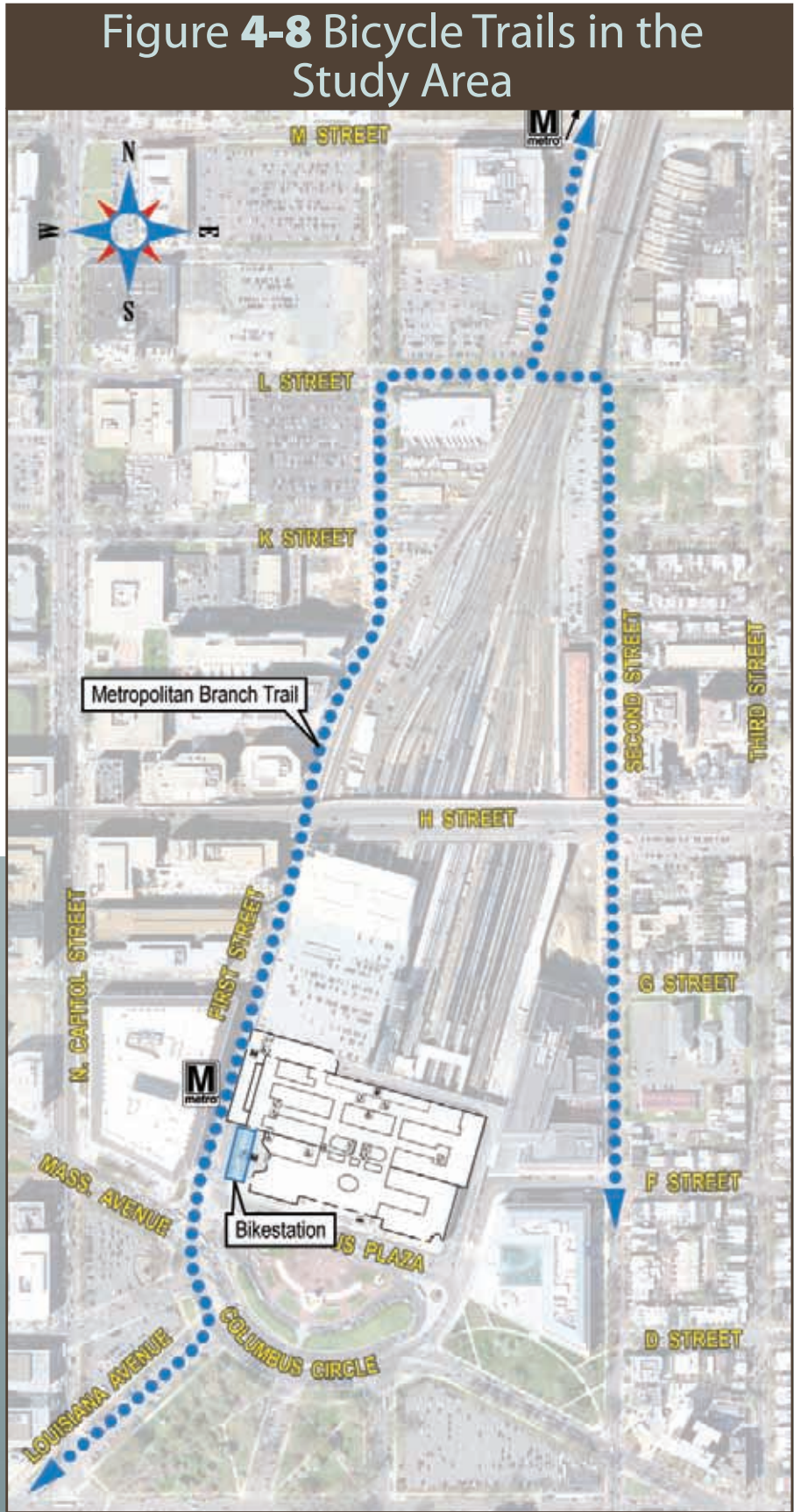
4.6.1 Bicycles

Current bicycle parking is located at the southwest corner of Union Station, with storage provided for a maximum of about 50 bicycles. However, cramped conditions limit the number of bicycles that can actually be parked. To alleviate these bicycle parking issues, a new Bikestation has recently been constructed and is scheduled to open in the fall of 2009. Additionally, it is proposed that

The new Bikestation under construction with the U.S. Capitol in the distance.



the Metropolitan Branch Trail be connected to Union Station, with a terminus at the new Bikestation, in order to promote safe, regional bike travel as shown in **Figure 4-8**.



Current Bicycle parking at Union Station (above) and Metrobus exiting Columbus Plaza at Union Station (below).

4.6.2 Metrobus

There are fourteen Metrobus stops in the study area, most of which serve multiple Metrobus routes. The highest volume routes, in terms of ridership, see over 100,000 riders in a normal workweek (Monday-Friday) and include routes 80, 96, 97, D1, D3, D6, D8, and X2. Within the study area, the intersections with the highest observed volume in Metrobus ridership include:

- North Capitol Street and H Street
- Columbus Circle/Massachusetts Avenue and First Street NE
- Columbus Plaza (near the southwest corner of Union Station)
- North Capitol Street and Massachusetts Avenue



Figure 4-9 shows the ridership in these areas, in addition to other intersections with significant ridership. The information in the figure was obtained by WMATA in October 2008.



4.6.3 D.C. Circulator

The D.C. Circulator system is relatively new, and as such, the buses are bold, modern, and very distinct from Metrobuses. D.C. Circulator service includes five routes between:

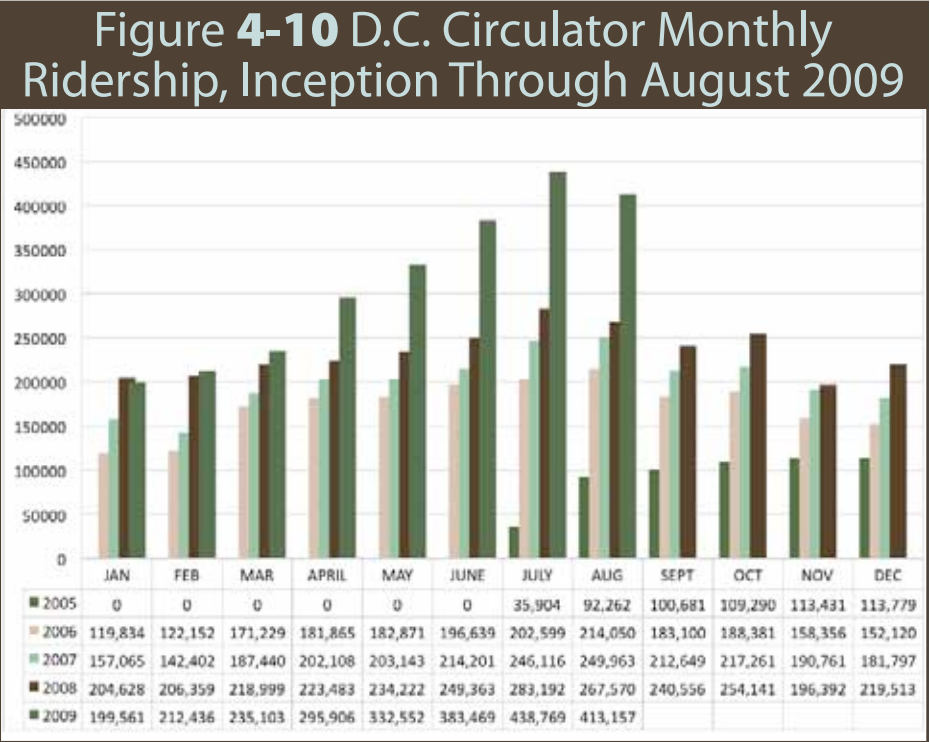
- Union Station and Navy Yard Metro;
- Woodley Park, Adams Morgan, and McPherson Square Metro;
- Convention Center and the southwest Waterfront;
- Georgetown and Union Station; and
- the Smithsonian loop.

Though the Circulator bus caters to both tourists and District residents alike, its operations near Union Station are heavily commuter in nature. Service to Union Station runs from 7 AM to 9PM during the week, with a scheduled headway of 10 minutes throughout the day. While frequency of operation does not change, ridership on the Circulator makes a marked increase during peak periods in the day. Additionally, ridership experiences a seasonal peak in the summer months of June, July and August when schools are out and tourism swells. In April 2009, ridership spiked due to the addition of two new routes.

D.C. Circulator service has seen a steady increase in ridership each year (per a monthly comparison). **Figure 4-10** shows the monthly ridership for the D.C. Circulator service from inception through August 2009.

4.6.4 Commuter Buses

Commuter bus service is an intercity transit service that provides commuters from outside the D.C. metropolitan area an alternative means of getting to/ from work each day. Commuter buses, while represented by substantially smaller numbers than Metrobuses, also have a role in moving passengers to and from Union Station. Commuter buses provide a constant stream of bus traffic into the city, predictable by time of day and uninfluenced by season.



Conventional peak traffic periods see the vast majority of commuter bus volumes, while midday sees activity taper off.

Table 4-2 shows the ridership for commuter bus routes servicing Union Station. Note that the table does not reflect ridership specifically at Union Station but rather near the station.

Table 4-2 Ridership¹ of Commuter Buses which Serve the Union Station Area

	MTA Maryland ²	Loudon County ³
Average daily ridership for route servicing Union Station	2,153	1,865
Resulting average bus occupancy servicing Union Station	36	43

1 Of those systems for which ridership data could be obtained (PRTC was not available)
2 Average daily ridership for FY2008, up to April 2008 for 903, 922, and 950 routes obtained from phone conversation with Glen Hoge of MTA, 5/8/08
3 Ridership for bus routes servicing Union Station area, May 2008, from <http://www.loudoun.gov/Default.aspx?tabid=969>

4.6.5 Tour Buses

Tour buses take visitors sightseeing, with routes around tourist attractions. Tour buses are a common sight around the District, shuttling tourists across the city to experience the history and culture of the nation's capital. As shown in **Table 4-3**, the majority of tour buses are focused on the National Mall, as well as locations with quick access to the Mall area. Street parking is available for buses along Maine Avenue and Water Street, as well as Ohio Drive and the Hain's Point area. These "first come-first serve" areas seem to be



Reston intercity bus in Columbus Circle.



Union Station Metrorail entrance at First Street (left) and Amtrak train leaving Union Station (right).

4.6.6 Intercity Bus

Although intercity bus ridership to the D.C. area is increasing, benefits from the increase may be limited for Union Station due to the remote location of the bus depot. New intercity bus services, such as MegaBus, operated by Stage Coach; Bolt Bus, operated by Greyhound; and the various coach buses serving the Gallery Place-Chinatown neighborhood are increasingly choosing to provide service from various curbside stops throughout the D.C. area. Few of these curbside stops are located near Union Station; operators instead choose locations throughout D.C. convenient to Metrorail or other regional transit points, including Gallery Place-Chinatown, Tenleytown, and Dupont Circle.

4.6.7 Streetcar

Unlike other modes of transportation in existence at Union Station, streetcar has not yet been introduced. However, given that the streetcar is envisioned as an integral part of the rehabilitation of H Street NE, it can be expected to help foster development and realize a high level of ridership, connecting surrounding neighborhoods to Union Station. While accommodation for a tensioned overhead catenary system has been built into the H Street rehabilitation project, communications and power distribution systems are not currently included in the project plans. These systems, in addition to a streetcar maintenance facility, turnback, and platforms, are critical components that will need to be addressed as planning and development of the streetcar infrastructure ensues.

4.6.8 Metrorail

Union Station plays a large role in Metrorail’s operations. While only served by the Red Line, Union Station maintains the distinction of being the highest-volume station in the system, with approximately 725,000 people entering the Metro system through the station each month.

Table 4-4 shows that more than two-thirds of the ridership from Union Station occurs during the peak periods, with ridership slightly higher in the evening period as compared to the morning.

Table 4-4 Volumes of Weekday Metrorail Trips Beginning or Ending at Union Station

	Metrorail Trips Originating at Union Station		Metrorail Trips Finalizing at Union Station	
A.M. peak (opening to 9:29 a.m.)	10,253	30%	12,259	36%
A.M. off-peak (9:30 a.m. to 2:59 p.m.)	6,255	19%	7,086	21%
P.M. peak (3 p.m. to 6:59 p.m.)	13,268	39%	12,033	36%
P.M. off-peak (7 p.m. to 12 a.m.)	3,875	12%	2,285	7%
Total peak	23,521	70%	24,292	72%
Total off-peak	10,130	30%	9,371	28%
Total	33,651	100%	33,663	100%

Source: WMATA, October 2008 Passenger Survey

Table 4-3 Combined Tour and Commuter Bus Population Observed Near Downtown Washington, D.C.

Location	Tour Or Commuter Buses	Touring School Buses
Hain’s Point, Ohio Drive	83	30
Streets adjacent to RFK Stadium parking lots	2	2
Anacostia bus parking lot	13	0
Maine Avenue, Water Street	83	0
National Mall and nearby street network	256	32
Near old Convention Center parking lot	9	0
Union Station parking garage	55	0
Total	501	64

Source: Parsons Transportation Group field data collection: May 15, 2008

4.6.9 Rail at Union Station

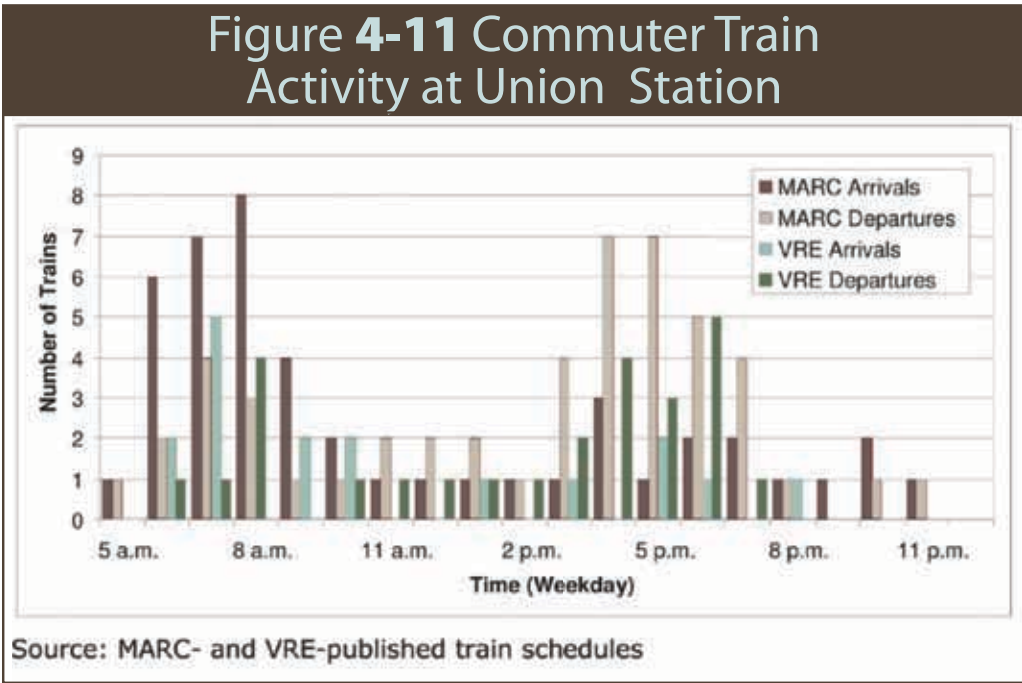
The historical transportation function of Union Station is as a rail terminal. Twenty tracks serve the station, carrying both commuter and intercity rail traffic. Seven tracks continue through the station, carrying traffic from the north to Virginia and other points south. Union Station is the terminus of two of Amtrak’s most popular services, Acela Express and the Northeast Regional, as well as five commuter rail lines (described in the following section).

Rail passengers at Union Station make use of common passenger facilities, including waiting areas, ticketing, and a first class rail lounge, that were built along the north edge of the building as part of the development activities associated with the 1981 Redevelopment Act.

4.6.10 Commuter Rail

Commuter rail service at Union Station is provided by MARC and VRE. MARC trains operate on three lines, extending to Perryville, Maryland; Martinsburg, West Virginia; and Baltimore, Maryland; with Union Station being the terminus and only D.C. station. VRE operates two separate lines, running from Manassas and Fredericksburg, Virginia, with service in D.C. at L’Enfant Plaza and Union Station.

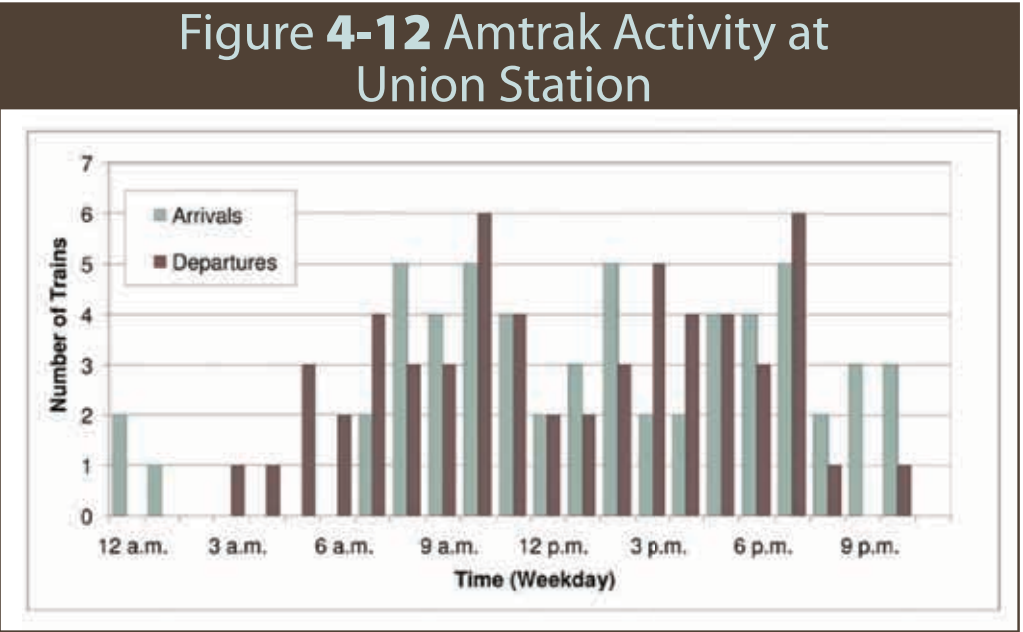
Figure 4-11 displays the frequency of commuter rail operations service at Union Station.



4.6.11 Intercity Rail

Long-distance rail service from Union Station is provided by Amtrak. The majority of Amtrak’s trains passing through Union Station are part of the Northeast Corridor rail service, which extends north to Philadelphia, New York City, and Boston. Schedules are focused primarily on the densely populated East Coast; however, a limited number of options are available for traveling as far south as Miami and as far west as Seattle and San Francisco. Additionally, some of Amtrak’s operations accommodate the suburban Washington-region commuters by allowing VRE and MARC fares to be accepted on select trains with payment of a small step-up fare.

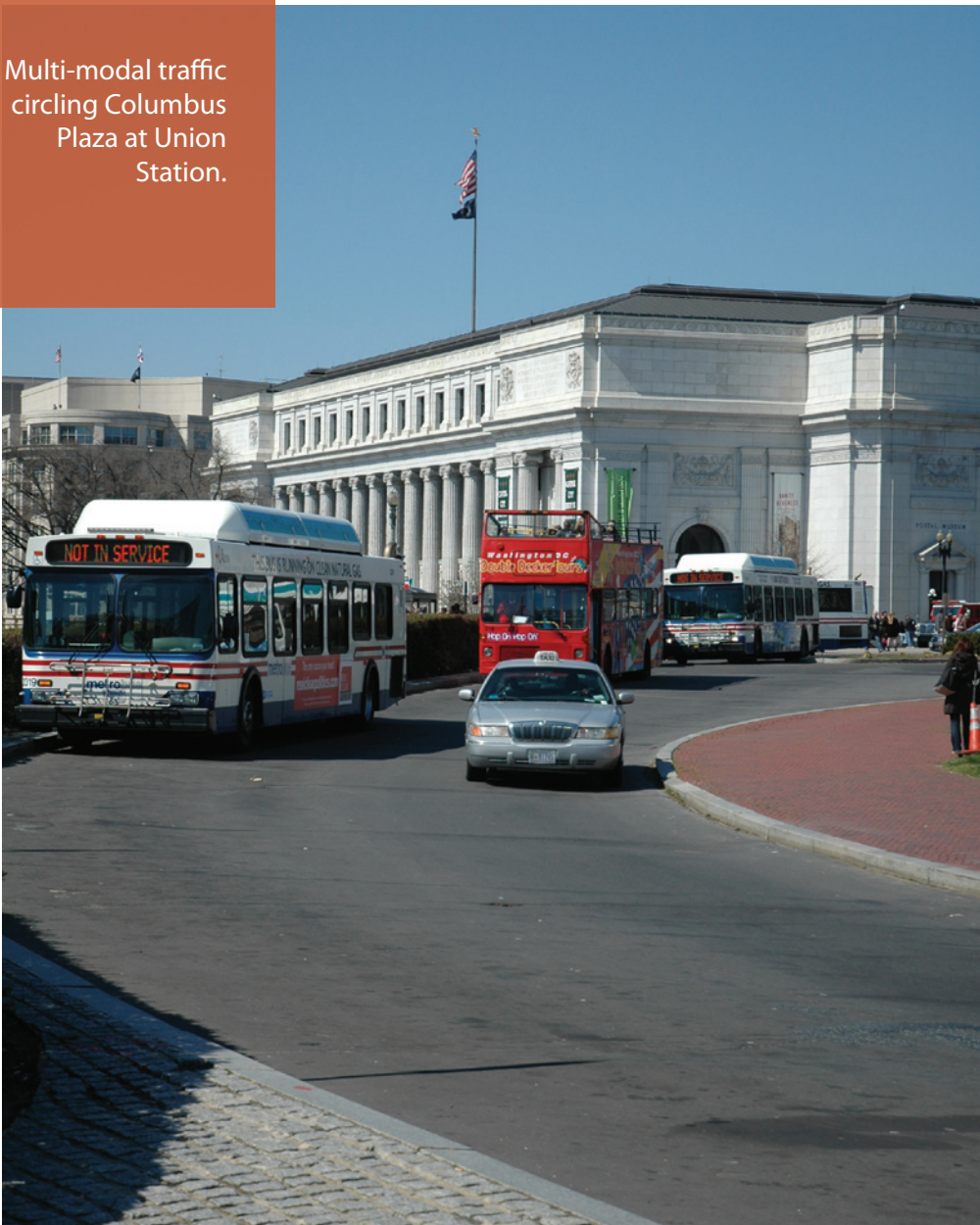
Approximately 85 Amtrak trains arrive and depart each day at Union Station with the volumes illustrated in Figure 4-12.



5 Future Transportation Demand

As demand for multi-modal transportation continues to grow in and around the D.C. region, growth pressures will continue to be felt at Union Station. Because the station is a hub not only for roadway-based transit, but also multiple types of rail, pedestrian, and bicycle traffic, as discussed in Chapter 4, continued growth across these modes will have a significant impact on facilities maintenance, as well as planning for passenger needs. Additionally, it should be noted that several key factors may result in demands being considerably higher than those in the discussion that follows.

Multi-modal traffic circling Columbus Plaza at Union Station.



Fluctuations in gas prices demonstrably change travel behaviors at the local and national level; general trends toward increased prices tend to create higher demand for transit services. Other factors, such as the aging demographic of America, may also accelerate use of the various non-automobile transportation modes currently served at Union Station.

Demand forecasts have been completed across all modes and are summarized in **Table 5-1**. A higher level of detail, regarding existing conditions and future transportation demand, can be found in the Baseline Study included as **Appendix A**.

Table 5-1 Mode Demand Forecast

Mode	Projected Demand
Bicycles	Construction of the new Bikestation will allow for three times the current number of bikes to be parked at Union Station. Additionally, the completion of the Metropolitan Branch Trail is sure to draw more regional bike traffic. Recent observations near the station counted 20-30 bikes per hour headed toward the station in the morning and up to 40 bikes per hour moving away from the station during the afternoon.
Metrobus	While there are no specific forecasts for increases in Metrobus usage for the routes serving the Union Station study area, general Metrobus ridership estimates tally growth at just less than 1 percent per year, which would result in overall growth of 35 percent to 40 percent 2050.
D.C. Circulator	The D.C. Circulator service has already realized significant growth in demand and has responded by adding two new routes; one is within the study area, between Union Station and the Navy Yard Metro. It is anticipated that this service will continue to grow as demands for similar bus services increase.
Commuter Bus	Demand for commuter bus services is likely to follow other projected bus ridership increases in the 30-percent to 50-percent range between now and 2050.
Tour Bus	Currently, no consolidated projections exist for increases in tour bus travel; however, fluctuations in tour bus traffic do tend to be seasonal as well as responsive to the economic climate.
Intercity Bus	Greyhound's estimate of future travel demand at its facility near Union Station is expected to be relatively flat. This may be partially due to the fact that large percentages of intercity bus passengers in D.C. are served on-street in multiple locations throughout the area.
Streetcar	Projected demand for the streetcar service has not yet been calculated. However, it can be anticipated that the high growth in demand for other transportation modes serving Union Station will translate into a high level of demand for streetcar service.
Metrorail	System-wide, Metrorail ridership projections show an increase of 42 percent from 2005 to 2030, with increases in the range of 50 percent by 2050. Accommodating these demands will require considerable additional space within Metrorail trains and stations and enhanced connections to other modes and street networks.
Commuter and Intercity Rail	Increase in rail travel demand will certainly be accompanied by increased demand on the Union Station facilities, including platforms and pedestrian spaces. Amtrak, MARC, and VRE all experience facilities and operational constraints at Union Station that may affect expected increases in rail travel. Between now and 2050, Amtrak expects to grow its service by 13%, from 85 trains per day to 96 trains per day; MARC expects to grow by 40%, from 93 trains per day to 132 trains per day; and VRE expects to grow by 73%, from 30 trains per day to 52 trains per day. *

* Note: VRE growth projections are to 2030

6 Recommended Union Station Intermodal Transit Center Plan

6.1 Introduction to Recommendations

The recommendations in this chapter address shortcomings in the current configuration of Union Station and position the station to accommodate expected growth between the present date and the year 2050. These recommendations were derived from identified needs (discussed in Chapter 3) that emerged from previous studies as well as from the data collection, charrette, and condition assessment phases of this study.

To spatially orient the reader, recommended improvements have been grouped according to study context areas starting as one would access Union Station from Columbus Plaza, move west through the station toward First Street, utilize First Street or the North Pedestrian Walkway to go north toward H Street, and move back through the station area from H Street and the Union Station Parking Garage. These study context areas include:

- **Area A: Columbus Plaza**
- **Area B: Train Concourse**
- **Area C: First Street**
- **Area D: H Street**
- **Area E: Parking Garage and Tracks**

Study context areas are delineated in **Figure 6-1**, which illustrates the overall physical context of this study (including buildings, roadways, other transportation features, etc.) and provides a “key” to follow-on exhibits that more fully illustrate individual recommendations within particular areas of the station complex.

Within the overall study area, recommended improvements relate to certain systems that address the nature of the recommendations being made. These systems include:

- Pedestrian
- Bicycle
- Bus
- Streetcar
- Rail
- Station
- Taxi/Motor Vehicle

Each system helps give further definition to improvements within the same context area. **Figure 6-2** shows the location of each of system within the overall study area.

Drawing from the information initially highlighted in **Figures 6-1 and 6-2**, **Table 6-1** includes a summary of recommended improvements that are classified according to context area and are further defined by system.

The table also shows which identified needs would be met through the implementation of each recommended improvement.

Recommended improvements are described in detail in Section 6.2 and corresponding figures are presented. At the end of Chapter 6, recommended improvements will be tied back to framework planning goals to illustrate how each goal is upheld in the context of USITC Feasibility Study recommendations.

Figure 6-1 Study Context Areas

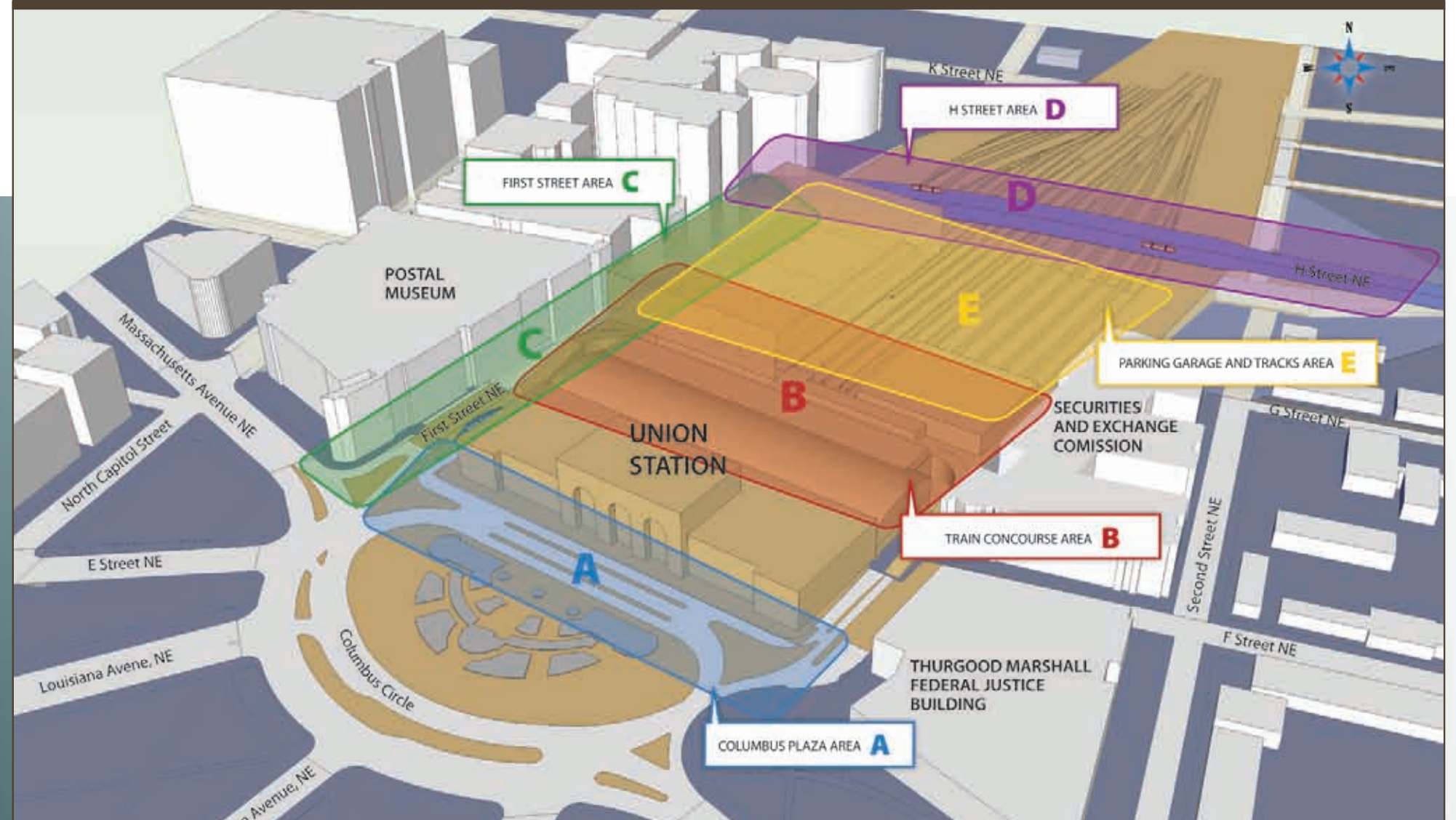
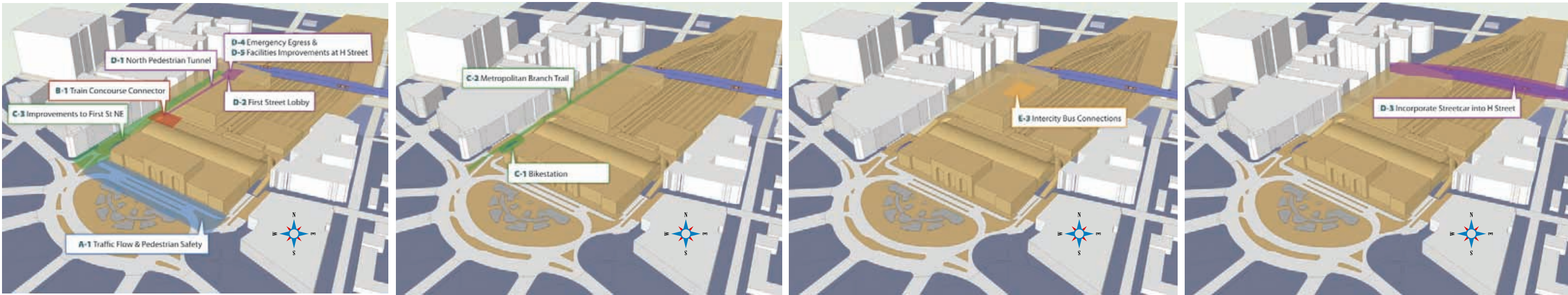


Figure 6-2 Modal and Station Systems in Study Area

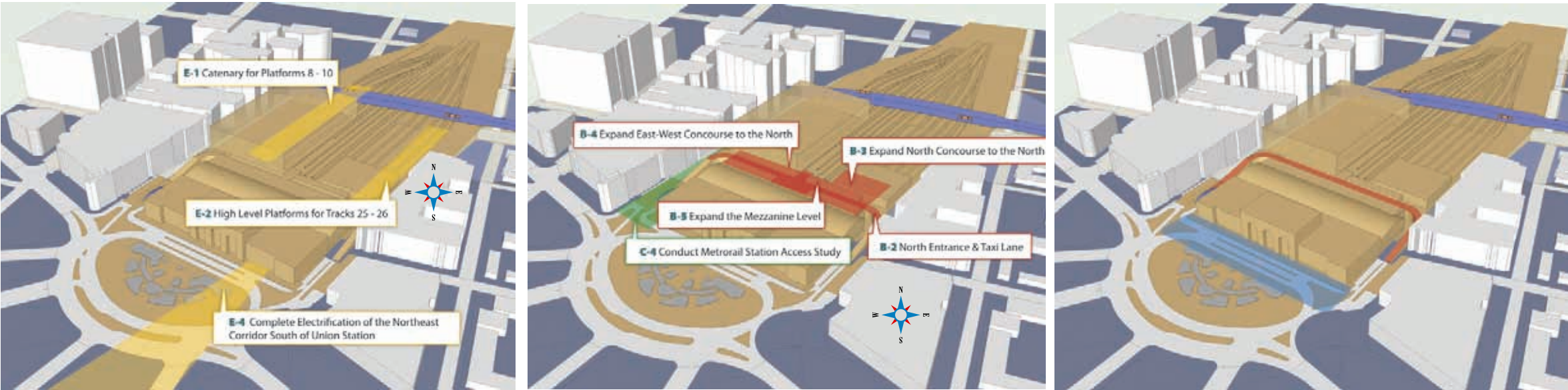


Pedestrian

Bicycle

Bus

Streetcar

































































































































Rail

Station

Taxi/Motor Vehicle



Table 6-1 Summary of Recommended Improvements

Study Context Area	Recommended Improvements	Improvement Notation	Contained in which Figure?	Related to which System?	Related to which identified needs?	Cost**
Columbus Plaza Area A	Improve Traffic Flow and Pedestrian Safety on Columbus Circle	A-1	6-2, 6-3	Pedestrian	     	Cost assigned to another project
Train Concourse Area B	Construct Train Concourse Connector	B-1	6-2, 6-4	Pedestrian	     	\$4,598,125
	Develop North Entrance along Taxi Lane	B-2	6-2, 6-4	Station	       	\$949,000
	Extend North Concourse to the North	B-3	6-2, 6-4	Station	       	\$21,660,000
	Expand East-West Concourse to the North	B-4	6-2, 6-4	Station	       	\$11,630,000
	Expand the Mezzanine Level	B-5	6-2, 6-4	Station	       	\$4,632,500
First Street Area C	Bikestation	C-1	6-2, 6-5	Bicycle	   	Cost assigned to another project
	Improve Connections to the Metropolitan Branch Trail	C-2	6-2, 6-5	Bicycle	   	\$27,000
	Improve Pedestrian Spaces along First Street NE	C-3	6-2, 6-5	Pedestrian	     	Cost assigned to another project
	Conduct Metrorail Station Access Study	C-4	6-2, 6-5	Station	       	\$250,000
H Street Area D	Complete North Pedestrian Walkway	D-1	6-2, 6-6, 6-7	Pedestrian	     	\$1,850,325
	Construct First Street Lobby	D-2	6-2, 6-6, 6-7	Pedestrian	     	\$5,035,000
	Incorporate Streetcar into H Street	D-3	6-2, 6-6, 6-7	Streetcar	    	\$5,291,600
	Construct Emergency Egress at H Street	D-4	6-2, 6-6, 6-7, 6-8	Pedestrian	     	\$4,986,510
	Enhance Rail Operations Facilities at H Street	D-5	6-2, 6-6, 6-7, 6-8	Pedestrian	     	\$12,868,000
Parking Garage and Tracks Area E	Return Catenary to Platforms 8-10	E-1	6-2, 6-8	Rail	  	\$320,000
	Construct High level platforms for Tracks 25-26	E-2	6-2, 6-8	Rail	  	\$540,288
	Improve Intercity Bus Connections through Construction of an Intercity Bus Station	E-3	6-2, 6-8	Bus	 	\$2,479,170
	Complete Electrification of the Northeast Corridor South of Union Station	E-4	6-2, 6-8	Rail	  	\$43,145,800
Additional Recommendations Not Tied to a Specific Area	Improve Interior Signage/Conduct a Comprehensive Signage Program	*	*	Pedestrian	     	\$720,000
	Implement TOD Principles	*	*	Station	       	\$300,000
	Implement Emergency Access/Egress Strategies	*	6-9	Station	     	Cost spread across different improvements

* Recommendation not shown in Figures

**Detailed cost elements may be found in Appendix C



= Capacity requirements



= Modal connections



= Pedestrian connections



= Safety and Security



= Historic preservation and character



= Transit-supportive land use



= Circulation



= Signage



6.2 Recommended Actions

This section goes into a greater level of detail about the recommendations introduced by context area and system in Section 6.1. It is important to note that the recommendations described in this section are conceptual – more detailed analysis will be needed in most cases to develop detailed designs and to refine cost estimates. All cost estimates are planning-level and represent costs in present-day (2009) dollars.

AREA A: COLUMBUS PLAZA

Improvement A-1: Improve Traffic Flow and Pedestrian Safety on Columbus Circle

Needs met:

- Improve pedestrian crossing safety.
- Address congestion and multiple transportation uses in Columbus Plaza.

The proposed changes to the traffic and layout of Columbus Circle and Columbus Plaza were recently approved by the National Capital Planning Commission to improve pedestrian flow across the plaza and vehicular circulation around the building. These improvements pay special attention to increased pedestrian safety in the area and include better marked pedestrian crossings at the east and west sides of Columbus Circle in the front of the building. In keeping with the historic character of Union Station, new crossings will be brick-stamped, instead of painted as before (as shown in **Figure 6-3**). The audible and tactile feedback provided by the stamped crosswalks is expected to calm traffic on Columbus Circle, especially on the heavily trafficked crossing of Columbus Court NE that connects Union Station with the Thurgood Marshall Federal Judiciary Building. It is anticipated that this project could begin construction in late 2009.

AREA B: TRAIN CONCOURSE AREA

Improvement B-1: Construct Train Concourse Connector

The Train Concourse Connector is proposed to link the North Pedestrian Walkway and the existing rail concourse level via a short tunnel (depicted on **Figure 6-4** as B-1). The primary purpose of the Train Concourse Connector is to provide an alternate channel for passengers exiting rail platforms and traveling to the west or north of Union Station, in addition to the 14-foot-wide “Metro passageway,” connecting

the Union Station tracks and platform to the Metrorail station. The passageway experiences significant congestion, often operating at LOS F, as passengers queue to use the bank of two escalators connecting the concourse level to the Metrorail mezzanine level.

The Train Concourse Connector improvement consists of a pair of escalators descending from the concourse level to a new 1,650-square-foot tunnel by which pedestrians can access both the North Pedestrian Walkway and Metrorail station. The Train Concourse Connector could potentially be outfitted with retail and could

be extended east in the event of future high-speed rail expansion.

Once the Train Concourse Connector is complete, train passengers wishing to go to First Street NE from the tracks will have the option of using either the Connector or the existing escalators at the north end of the Metrorail station. As a result of this improvement, the number of patrons using the First Street NE exit in the Metrorail station would likely be reduced as many train patrons traveling to areas near to or north of H Street would use the Train Concourse Connector to access the North Pedestrian Walkway.

Figure 6-3 Area A - Columbus Plaza Improvements

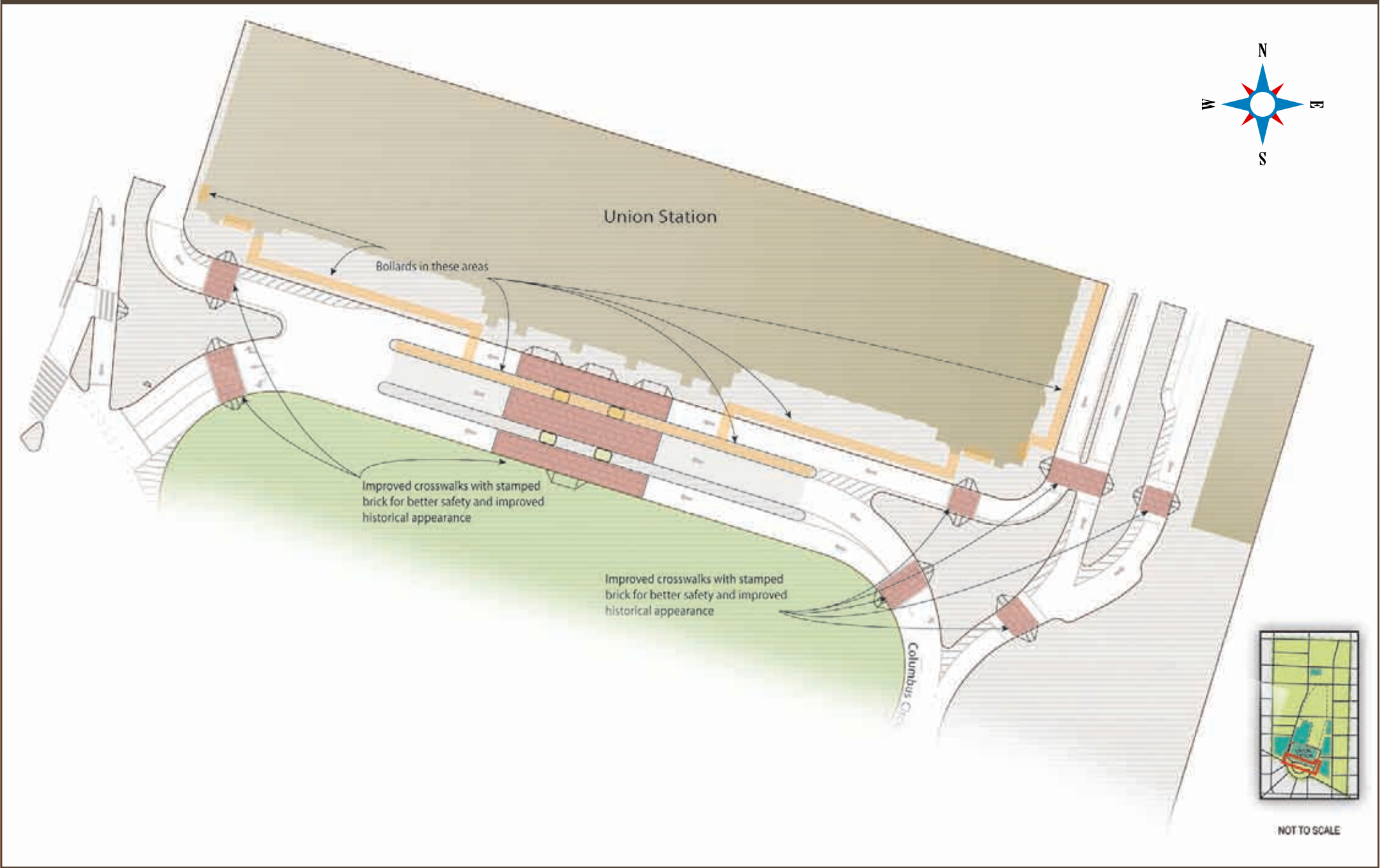
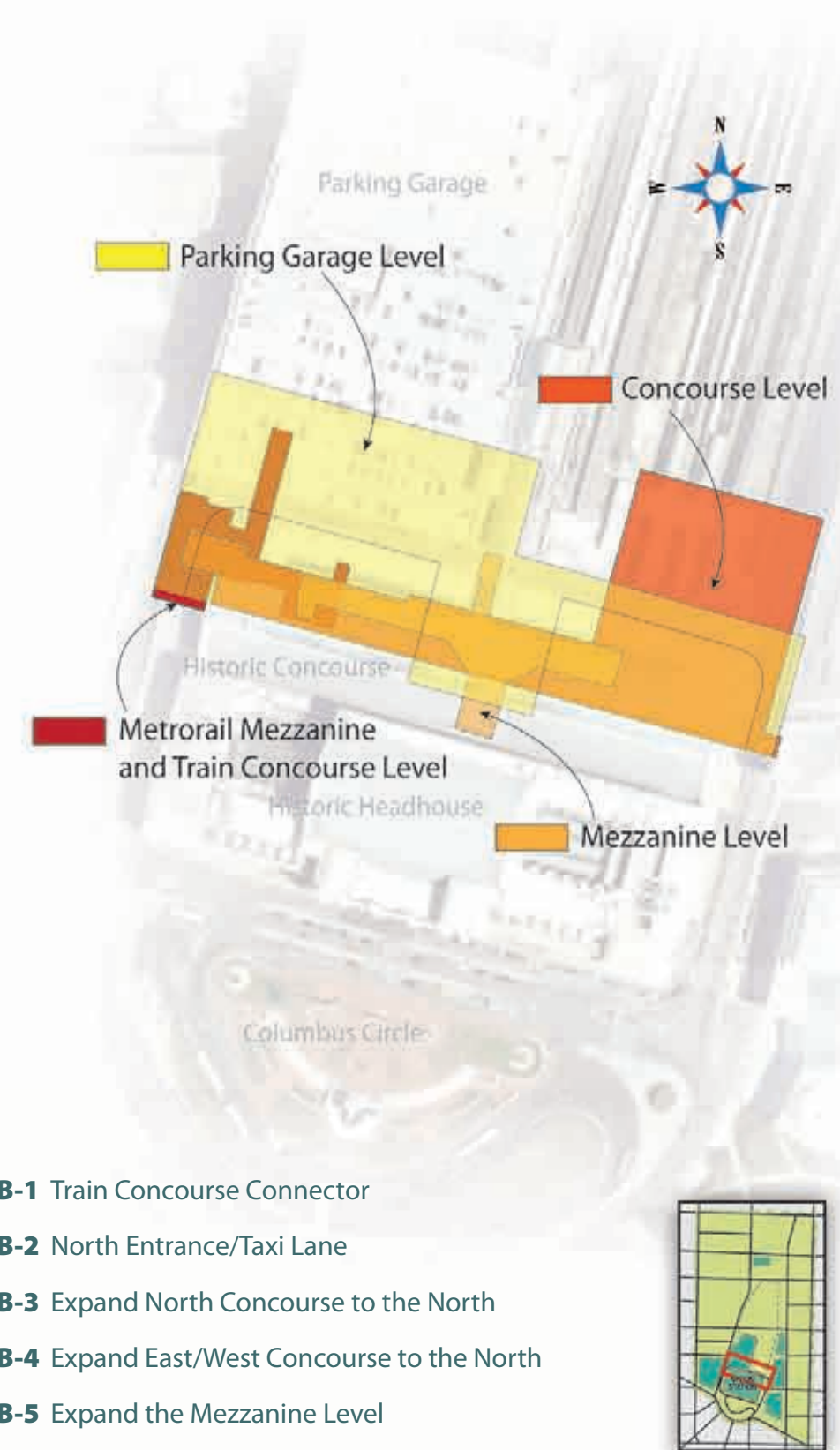
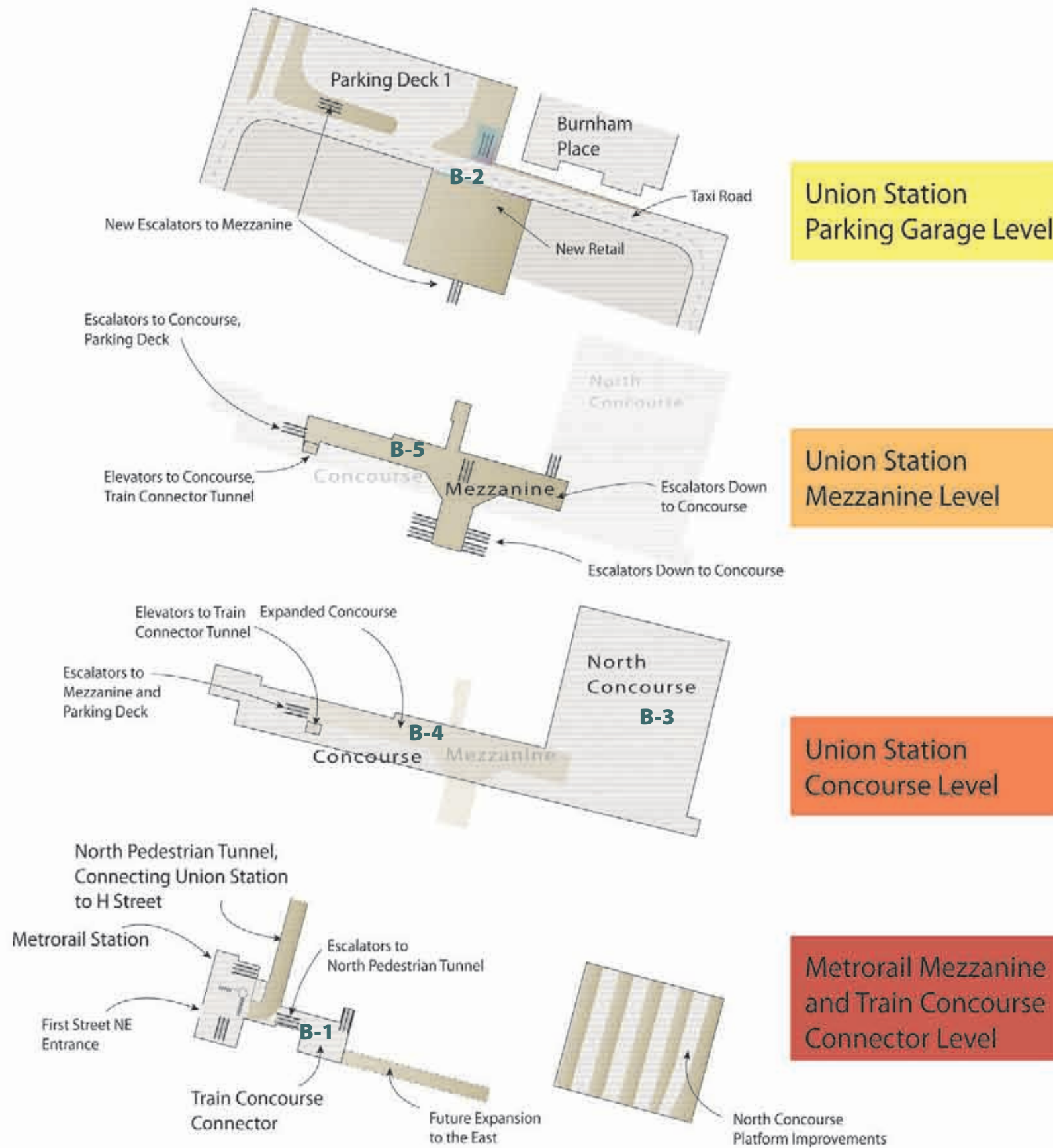


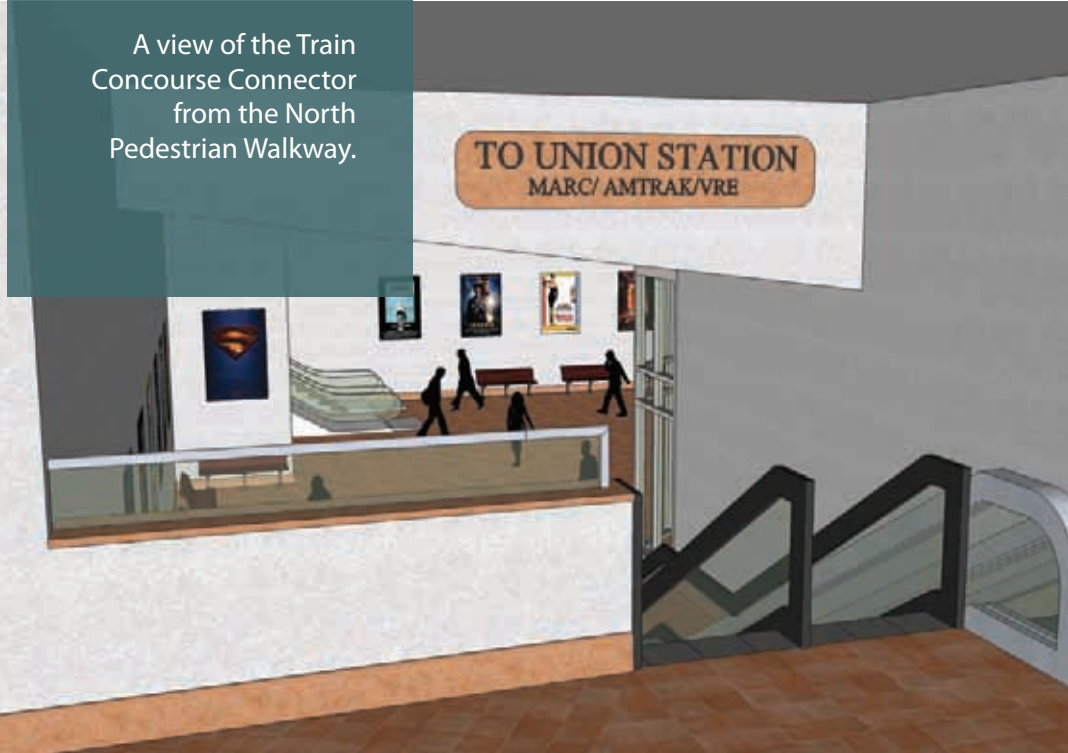
Figure 6-4 Area B - Train Concourse Pedestrian Elements



A view from inside the Train Concourse Connector, looking toward the entrance of the Metrorail station and the North Pedestrian Walkway.



A view of the Train Concourse Connector from the North Pedestrian Walkway.



Estimated planning-level construction costs for the Train Concourse Connector and associated vertical transportation elements are shown in **Table 6-2**. Note that these costs do not include property costs.

Table 6-2 Train Concourse Connector Construction Cost

Description	Estimated Cost*
Construct connector tunnel eastward from the juncture between the Metrorail station and the North Pedestrian Walkway..	\$4,598,125

*Detailed cost elements may be found in Appendix C

Improvement B-2: Develop along North Entrance/Taxi Lane

Currently, passengers who enter Union Station from the parking garage use a bank of escalators north of the taxi road. In preparation for future development along the Union Station tracks, it is proposed that the frontage along the taxi road be developed as an additional station entrance, with retail facing a new taxi stand between the station and the parking garage (noted on **Figure 6-4** as B-2). In addition to the existing bank of escalators on the north side of the taxi road, passengers would be able use a new bank of escalators on the south side of the taxi road.

Specifically, this improvement (costs shown in **Table 6-3**) would include the addition of 40,000 square feet of retail and pedestrian space located to the south of the taxi drive. Inside the retail area, two escalators would travel down to the mezzanine level, directly adjacent to the escalators traveling from the existing mezzanine level to the concourse levels.

Table 6-3 North Entrance/Taxi Lane Construction Cost

Description	Estimated Cost*
Construct retail and pedestrian space south of the taxi drive.	\$949,000

*Detailed cost elements may be found in Appendix C

Improvement B-3: Extend North Concourse to the north

Needs met:

- Expand rail operations space.

Underneath the proposed Burnham Place development, an expanded passenger concourse and improved train-boarding platforms are envisioned to be built above the easternmost tracks (signified by B-3 in **Figure 6-4**). This concourse would include approximately 45,000 new square feet of passenger boarding areas and passenger waiting areas.

The new North Concourse would significantly enhance the experience for passengers using trains on through-tracks-- currently Amtrak long-distance trains and VRE commuter trains-- and would unify the existing network of escalators that travel to the platforms, creating a single concourse waiting

room that would have retail options and vertical connections to Burnham Place. This connection will facilitate pedestrian movement to H Street. In addition, the platforms below the concourse would be significantly upgraded.

Improvements for an expanded passenger concourse would include:

Table 6-4 Expanded Passenger Rail Concourse Improvements

Description	Estimated Cost*
Extend North Concourse to the North	
Architectural and structural work	\$13,810,000
Vertical transportation (escalators and elevators)	\$5,600,000
Mechanical/Electrical/Plumbing systems	\$2,250,000
Expand East-West Concourse to the north	
Architectural and structural work	\$7,730,000
Vertical transportation (escalators and elevators)	\$1,800,000
Mechanical/Electrical/Plumbing systems	\$2,100,000
Total estimated cost	\$33,290,000

*Detailed cost elements may be found in Appendix C, ** For costing purposes, this improvement was calculated within the cost of the North Concourse improvement.

Improvement B-4: Expand East-West Concourse to the north

Needs met:

- Expand rail operations space
- Separate inbound and outbound train passengers.

The façade of the current concourse facing the Union Station tracks is modulated in distances of 8 to18 feet; a 1980s design element that was intended to add interest and channel customers to the station doors connecting to the metro passageway to the west. As part of a larger group of expanded passenger rail concourse improvements, the wall of the concourse would be moved a uniform distance from the tracks, allowing for more flexibility in gate arrangements and providing 2,200 additional square feet of space in the passenger rail concourse (represented in **Figure 6-4** by B-4; cost in **Table 6-4**). As part of the same improvement, the current concourse would be significantly reconfigured to provide a larger, brighter, and more open environment for passengers boarding trains and would include significant improvements to the passenger amenities and retail serving the concourse area. Some facilities, such as Club Acela, exist in the area to be reconfigured, and may need to be relocated. Stakeholders generally agree that reconfiguration will provide greater flexibility for train operators using the concourse.



Improvement B-5: Expand the Union Station Mezzanine Level

Needs met:

- Expand train station space vertically and horizontally
- Address major bottlenecks
- Improve and activate pedestrian corridors with retail uses and visual interest
- Provide for separating inbound and outbound train passengers
- Expand capacity of commuter rail to Metrorail pedestrian corridors

The current Union Station mezzanine serves as a transition area for passengers traveling to and from the parking garage to the concourse level. In its current configuration, it serves most effectively to channel passengers from the parking garage to the mezzanine level of retail. In the improvement envisioned by the study, the mezzanine would be greatly expanded to serve as an additional circulation space for all Union Station patrons. Central to the improvement are the additions of 4,000 square feet of pedestrian space to the west of the current mezzanine and 3,450 square feet of space to the east (portrayed in **Figure 6-4** as B-5). On either end of these additional pedestrian areas would be vertical circulation to the levels above and below:

- On the west side of the expanded mezzanine, passengers could travel down to the concourse level or use elevators to travel to the Train Concourse Connector.
- On the east side of the expanded mezzanine, passengers could travel down to the train concourse, as well as up to Burnham Place, once it is developed.

Along the existing concourse, an additional set of escalators would be added, alleviating the congestion experienced on the existing escalators above the Amtrak information booth. These costs are included in **Table 6-5**.

Table 6-5 Costs for Mezzanine Improvements

Description	Estimated Cost*
Add vertical access to H Street, MARC, Metro, and mezzanine bridge	\$327,500
Improve mezzanine level	\$4,305,000
Total estimated cost	\$4,632,500

*Detailed cost elements may be found in Appendix C

AREA C: FIRST STREET AREA

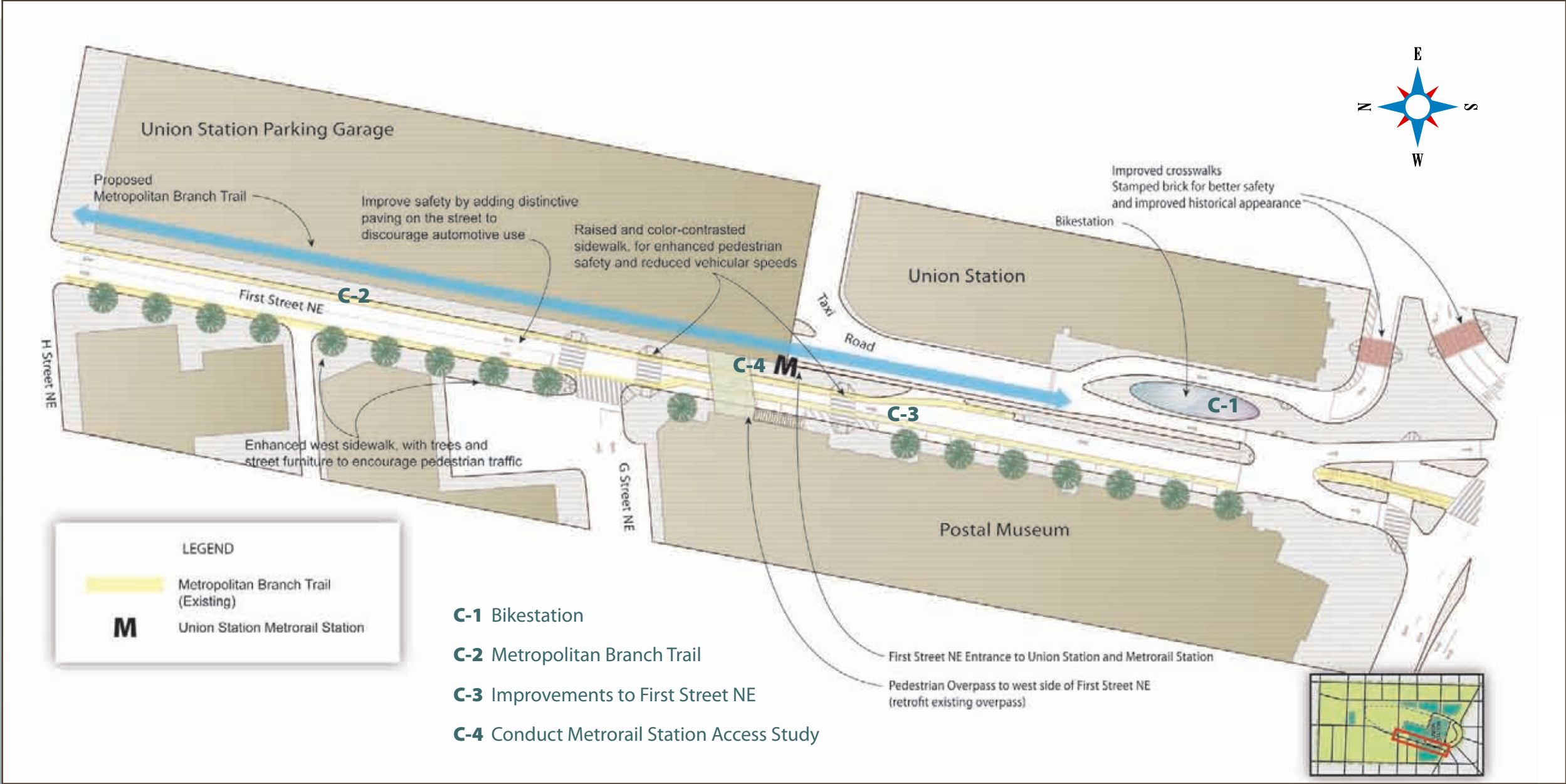
Improvement C-1: Bikestation

Needs met:

- Improve bicycle access to Union Station.
- Support a link between the Metropolitan Branch Trail and the new Bikestation.

The bike transit center recently completed at the southwest corner of Union Station will significantly improve bicycle facilities for Union Station patrons, as

Figure 6-5 Area C - First Street Improvements



well as workers in the surrounding Capitol Hill and NoMa neighborhoods. This bike transit center, known as Bikestation, is located at the south terminus of the Metropolitan Branch Trail and will supplement and encourage use of the trail (noted as C-1 in **Figure 6-5**). The costs associated with Bikestation have been assigned to a separate project by DDOT.

Improvement C-2: Improve Connections to the Metropolitan Branch Trail

Needs met:

- Improve connectivity between bike paths and travel modes at Union Station.



The new Bikestation under construction, with the U.S. Capitol in the distance (above). Rendering of the completed Bikestation (below).



- Separate modes where appropriate for safety.
- Create Metropolitan Branch Trail connections to Bikestation.

The Metropolitan Branch Trail (MBT) is an 8-mile trail that will extend from Silver Spring, Maryland, to the U.S. Capitol via Union Station. Integration of the MBT would be part of a larger effort to integrate bicycle pathways into Union Station, as several bicycle paths are envisioned to meet at a hub anchored by Bikestation, D.C.

Although substantial improvements to trail infrastructure have been made north of Union Station, the route from the New York Avenue Metrorail Station to Union Station remains at grade. Currently, First Street NE has extremely limited capacity to accommodate the trail. Thus, planners at DDOT hope to accommodate the MBT in an off-street right-of-way between I and H streets NE. From H Street NE to the Union Station Bikestation, the bicycle trail would travel along the existing garage ramps connecting H Street NE to Columbus Plaza (depicted in **Figure 6-5** as C-2). This improvement is estimated to cost \$27,000 and while the final configuration of the right-of-way between I Street NE and H Street NE has yet to be determined, it will be determined as a part of the Burnham Place final design

Improvement C-3: Improve Pedestrian Spaces along First Street NE

Needs met:

- Encourage more use of the west side of First Street, NE.
- Improve safety by adding distinctive paving on the street, such as cobblestones, to discourage use by automotive traffic.
- Create access to the First Street overpass, through an added stairway on the west side of First Street, NE.

First Street NE serves as one of the most important pedestrian spaces in the Union Station complex. For passengers exiting Union Station to reach NoMa, First Street is the primary street through the station exit on the Metrorail mezzanine. Both pedestrian and streetscape improvements, such as cobblestone paving and improving existing sidewalks, would encourage pedestrians to use the west side of the street, adjacent to the recent developments of NoMa. Central to these improvements would be paving the street differently, to discourage use by automotive traffic; cobblestones are one paving option that would help achieve this result. Also, the addition of a set of stairs providing access to the overpass over First Street (that connects the Postal Museum with the Union Station concourse level just south of G Street) would provide a much needed connection between the west side of First Street NE and Union Station. This overpass was designed for pedestrians, although it is currently used only for storage. Ideally, as part of this improvement, the overpass would connect with the existing metro passageway in Union Station, allowing train passengers to bypass the often congested Union Station Metrorail station mezzanine level when trying to reach First Street NE (illustrated as C-3 in **Figure 6-5**). Activating and implementing adaptive reuse of the overpass would add an additional 6,000 square feet of circulation area to the Union Station complex. As with construction of the Bikestation, costs associated with this improvement have been assigned to another project.

Improvement C-4: Conduct Metrorail Station Access Study

Many of the proposed changes in this document would impact the existing Union Station Metrorail Station, and would need to be carefully coordinated with WMATA to minimize adverse effects. Conducting an Access Study for the Union Station Metrorail Station would help DDOT and WMATA better identify the exact issues that may arise when improvements to Union Station happen, allowing planners to anticipate and minimize adverse effects to operations and optimize improvements. Because this recommendation centers geographically on the Metrorail station, it is noted as C-4 on **Figure 6-5**.

Details:

- Survey patronage
- Survey connecting transit services (Metrobus, VRE, MARC)
- Incorporate existing studies on parking, Union Station train travel

Table 6-6 Conduct WMATA Station Access Study

Description	Estimated Cost*
Conduct WMATA Station Access Study.	\$250,000

*Detailed cost elements may be found in Appendix C

AREA D: H STREET AREA

Improvement D-1: Complete North Pedestrian Walkway

The North Pedestrian Walkway recommendation would entail activating the existing unused WMATA north-south pedestrian walkway (the entrance is visible on the east wall of the existing Metrorail station, immediately behind the bank of fare gates) and extending it from its current northern terminus to H Street NE. The walkway was partially completed at the time of Metrorail station construction, pursuant with plans to move the passenger rail concourse north to H Street, and the constructed portion of the walkway reaches approximately 500 feet north of the existing Metrorail station, sloping down gradually from approximately 40 feet above sea level to approximately 20 feet above sea level. As part of the proposed improvement, an additional (approximately) 125 feet of walkway would need to be excavated north of the existing walkway and finished in a manner complementary to it. Detailed plans and cross sections including the North Pedestrian Walkway, appear in **Figures 6-6 and 6-7**. The walkway improvement is denoted as D-1.

The proposed work is estimated to cost \$1,850,325; however, the viability of implementing this lower-level pedestrian connection is greatly enhanced by the fact that the walkway is largely complete and its connection to the Metrorail station is in place (although the walkway access is currently provided through a locked door). Estimated planning-level construction costs for the North Pedestrian



Figure 6-6 Area D - Plan View and East-West Cross-Section at H Street

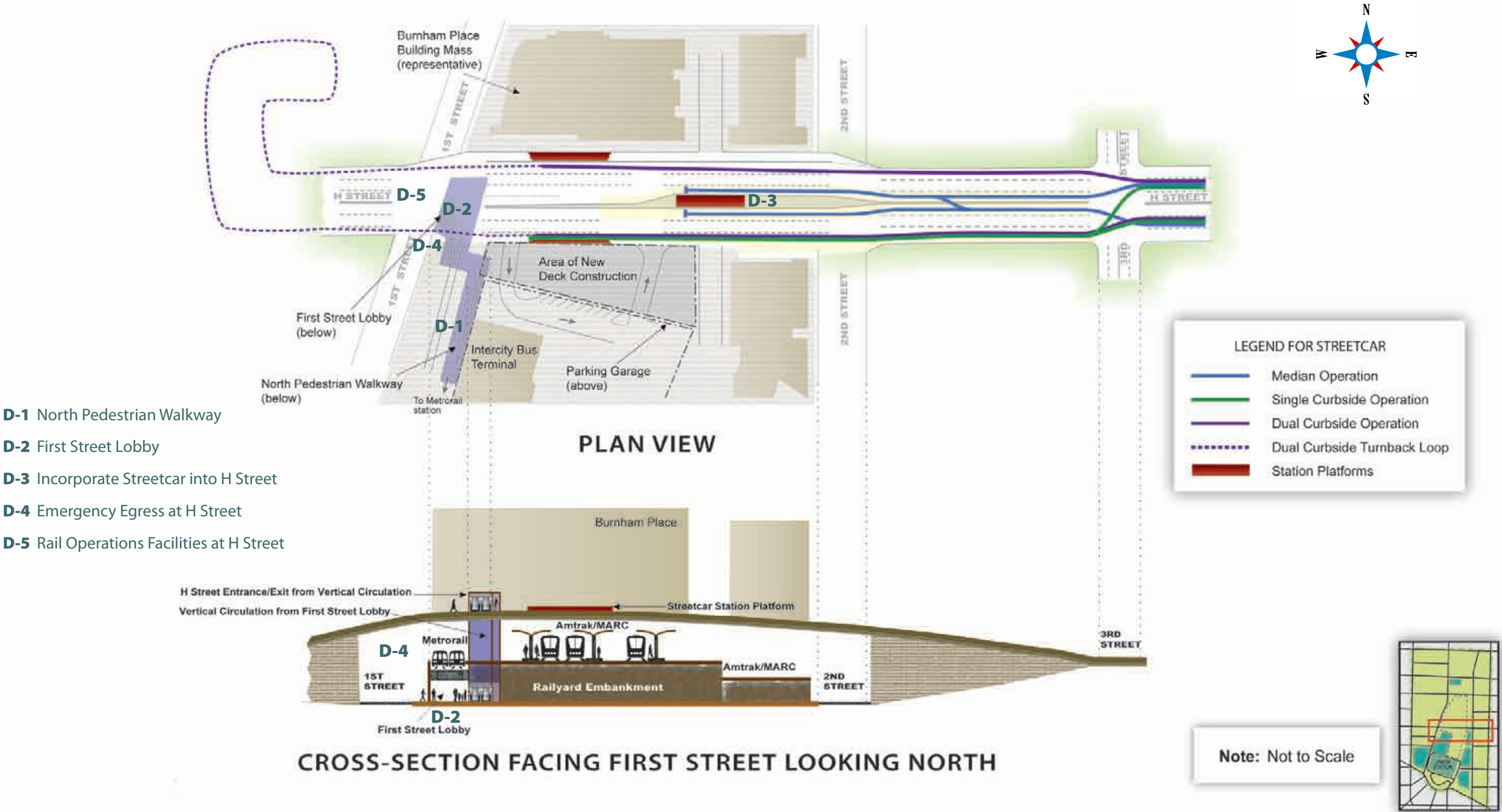
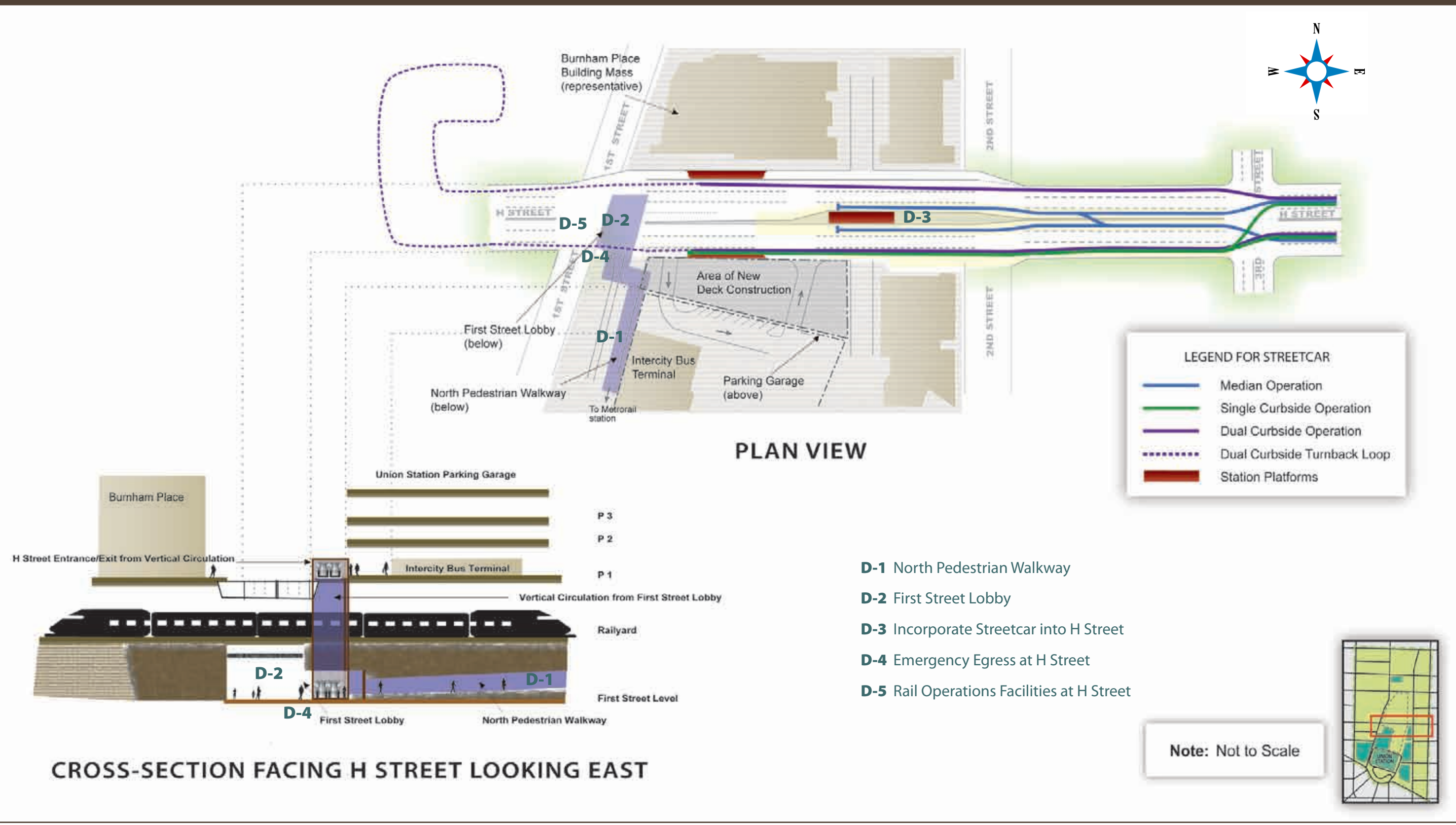


Figure 6-7 Area D - Plan View and North-South Cross-Section at H Street





Conceptual view inside the North Pedestrian Walkway.

Walkway are shown in **Table 6-7**. It is important to note that these costs do not include property or rights-of-way, or any costs related to rights-of-way from the old H Street roadway tunnel, which would need to be vacated.

Table 6-7 North Pedestrian Walkway Construction Cost

Description	Estimated Cost*
Complete currently unused north-south WMATA walkway.	\$1,850,325

*Detailed cost elements may be found in Appendix C

Improvement D-2: Construct First Street Lobby

To complete lower-level pedestrian connections, a portion of the space that was previously the H Street right-of-way would be finished to serve as a lobby area for passengers entering and exiting Union Station from First Street NE (shown as D-2 on **Figures 6-6 and 6-7**). The 28,500-square-foot lobby space, including 2,000 square feet of retail, would have doors opening to First Street NE and vertical circulation connecting the lobby to the surface of H Street NE. This vertical circulation would be located just to the south of the lobby at the north end of the North Pedestrian Walkway.

First Street Lobby improvements would cost approximately \$6,203,750 to build and would include retail opportunities, connections to the North Pedestrian Walkway, and vertical circulation to the H Street overpass/Burnham Place level. This space is currently used for parking and storage by Amtrak; the westernmost portion (the space that would be converted into the lobby) was modified in 1970 to accommodate Metrorail, which required clearance as the Metrorail tracks travel up the grade from the Union Station Metrorail station.

The North Pedestrian Walkway is owned by WMATA, which has a vertical easement that connects to H Street. Currently, Amtrak occupies a portion of that easement at track level. It is recommended that in addition to the identification and delineation of respective easements and management, the USRC, WMATA, and DDOT work together to come to an agreement for the maintenance, security, and retail management of both the walkway and lobby areas.

Table 6-8 First Street Lobby Construction Cost

Description	Estimated Cost
Build a lobby at First and H Streets NE	\$5,035,00

*Detailed cost elements may be found in Appendix C

Improvement D-3: Incorporate Streetcar into H Street

Needs met:

- Integrate the H Street streetcar into the Union Station complex.
- Improve and activate pedestrian corridors with retail uses and passengers.
- Expand active space to H Street with modal and pedestrian connections and activities.
- Serve new land uses with transit.

The USITC Feasibility Study suggests an extension of the proposed H Street Streetcar to serve Union Station (marked as D-3 on **Figures 6-6 and 6-7**).

A design with dual-curbside alignments is suggested due to its minimal impact on traffic conditions on the H Street overpass. From its terminus at H and Third Streets NE, a line would travel westbound on the north side of the bridge to a curbside station just beyond the peak of the H Street overpass. On the south side of the H Street overpass, a curbside station would serve the vertical circulation node that was discussed in the First Street Lobby improvement description.

Although this option includes the cost of a streetcar maintenance facility to the south of H Street on a non-developed parcel, real estate costs were not included in the estimate. Equally important to note is that a loop or turnback to the west would be necessary for the streetcar to complete its circuit and return back to H Street. This loop or turnback would ultimately be determined as part of future efforts to expand the streetcar west.

Conceptual view of the East-West Concourse expansion.

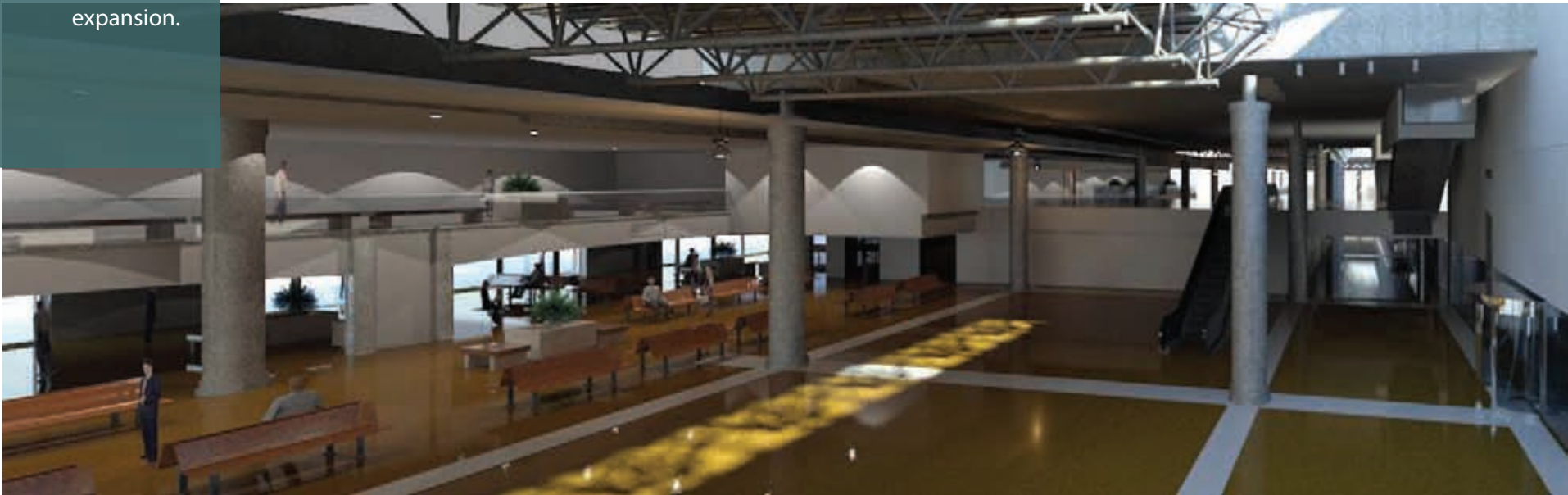


Table 6-9 Costs for Streetcar Expansion to Union Station

Description	Estimated Cost*
Dual curbside alignment, with turnback loop west of station	\$2,591,600
Streetcar maintenance facility	\$2,700,000
Total estimated cost	\$5,291,600

*Detailed cost elements may be found in Appendix C

Improvement D-4: Construct Emergency Egress at H Street

Needs met:

- Improve integration with intercity bus service.

The study proposes installing three escalators on high level platforms and two on low level platforms (equally spaced on platforms serving active tracks), descending from the platforms to the H Street Tunnel (currently used by Amtrak as operations space) to improve emergency egress from rail platforms (signified in **Figures 6-6 and 6-7** by D-4). The costs associated with this improvement include excavation from existing platforms to the H Street Tunnel and installation of escalators.

Table 6-10 Costs for Emergency Egress Construction at H Street

Description	Estimated Cost*
Excavate to H Street Tunnel and install elevators on three high level and two low level platforms	\$3,277,170
Excavate to H Street Tunnel and install elevators on two low level platforms	\$1,709,340
Enhance Rail Operations Facilities at H Street (Including finished commissary space)	\$12,868,000
Total estimated cost	\$17,854,510

*Detailed cost elements may be found in Appendix C

Improvement D-5: Enhance Rail Operations Facilities at H Street

Needs met:

- Expand rail operations space.

When the H Street overpass was constructed, the tunnel that had previously carried H Street underneath the Union Station tracks was sealed from traffic and became Amtrak operations space. Although this space is very large, it is also somewhat inaccessible – access is gained through roll-up doors to the east and west sides of the train tracks. Proposals have been suggested throughout the years to move various Amtrak operations facilities to this space, primarily the commissary functions that are located on the western edge of the Union Station tracks. With the need for vertical circulation between the surface of the H Street overpass and First Street clearly identified in the First Street Lobby improvement, it would be prudent to explore the use of this space for commissary functions or other similar functions that require proximity to the tracks, but not immediate adjacency. In the event of a more formalized use, the space will require improvements, including but not limited to lighting, paving, and signage. However, these improvements are recommended to be completed even before a formal use is identified as the space is ideal as an emergency egress route from rail platforms to the proposed First Street Lobby. This recommendation is noted on **Figures 6-6 and 6-7** as D-5 and its estimated costs are noted in **Table 6-10**.

AREA E: PARKING GARAGE AND TRACKS AREA

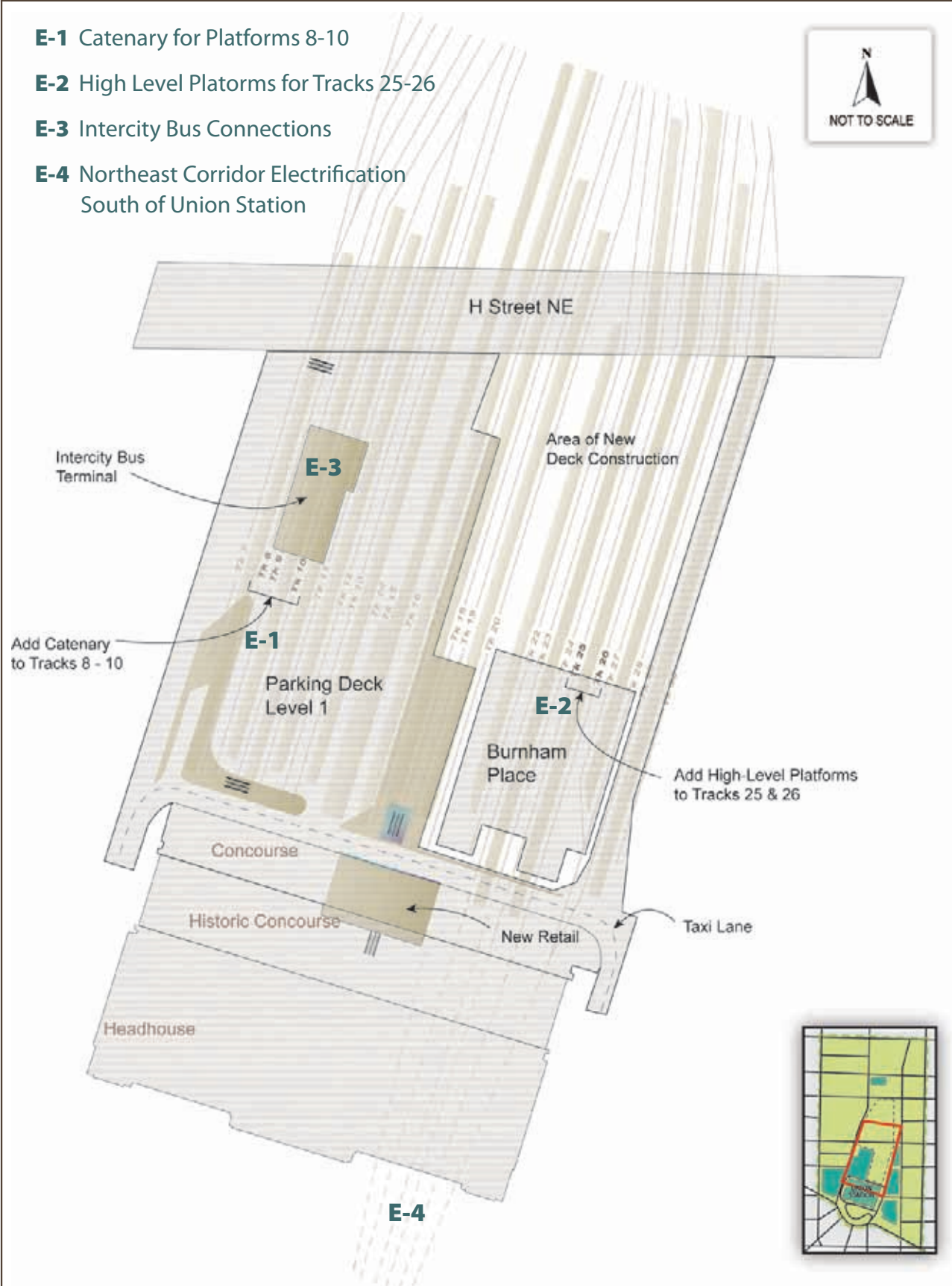
Improvement E-1: Return Catenary to Platforms 8 through 10

Needs met:

- Expand rail operations space.

This improvement (marked as E-1 on **Figure 6-8**) would return overhead catenary, the power distribution system for trains using electric locomotives, to tracks 8 through 10, as currently, these tracks can only be used by diesel powered MARC trains. This improvement is estimated to cost \$320,000 and is an important capacity requirement for year 2050 planning purposes on the Northeast Corridor. Currently, all Amtrak trains in the Northeast Corridor use electric locomotion, while some MARC Penn Line trains do not. To accommodate increased train volumes on the Northeast Corridor in 2050, all MARC Penn Line trains will need to use electric locomotives to meet the acceleration requirements that increased volumes will necessitate. MARC trains, which use tracks 8 through 16, will need the operational flexibility to store

Figure 6-8 Area E - Improvements to Tracks and Parking Garage



and operate all types of trains on all types of tracks and overhead catenary will help to create this operational flexibility.

Improvement E-2: Construct High-level Platforms for Tracks 25 and 26

Needs met:

- Expand rail operations space.

Currently, all through-tracks at Union Station (the tracks used by Amtrak long-distance trains to Atlanta and Miami, Amtrak trains to Virginia, and VRE trains to Virginia) have low-level platforms, which generally extend to the same level as the top of the rail and require passengers to use stairs to reach the car level. Because passengers must travel stairs to enter the cars, low-level platforms are slower to board than high-level platforms.

Currently, low-level platforms, while not ideal, are not an operational problem, as all trains using the through-tracks remain at Union Station for at least 15 minutes. However, to accommodate future electrification and high-speed rail to points south, several high-platform tracks will be needed in the lower-level track area, allowing for faster boarding and alighting. To meet this need over the next few years, it is recommended that high-level platforms be constructed starting with Tracks 25 and 26 (shown in **Figure 6-8** as E-2). This improvement is estimated to cost \$540,288.

Improvement E-3: Improve Intercity Bus Connections through Construction of an Intercity Bus Station at the north end of the Parking Garage

Needs met:

- Improve integration between intercity bus service and transportation modes currently found at Union Station.

Intercity bus is the only regional transportation mode that does not operate directly from Union Station. Greyhound and other intercity bus providers propose operating bus services from a new intercity bus station at the north end of the parking garage at Union Station (designated E-3 on **Figure 6-8**) to create easier connections to other modes in the regional system for intercity bus patrons. The construction of this bus station is estimated, by rough order of magnitude, to cost between \$1 million and \$6 million, depending on the type and permanence of the structure. In addition, intercity bus providers have identified operational needs for approximately 11 bus loading positions, 3 ready bus parking spaces, as well as a need for ticket sales, passenger queuing, and operation support spaces. The total square footage needed would be between approximately 11,000 square feet of interior space and 30,000 square feet of total space.

While most stakeholders welcome the addition of intercity bus service to Union Station, the exact configuration of spaces on the parking garage is under discussion amongst the Union Station stakeholders, particularly the USRC, who has leased the parking garage. The addition of intercity bus services would necessitate displacing some users of the existing parking garage, which include tour buses, Zipcar, the D.C. Circulator, and in the future, Metrobus.

Improvement E-4: Complete Electrification of the Northeast Corridor South of Union Station

Needs met:

- Expand rail operations space.

The lack of electrification south of Union Station forces Amtrak to switch locomotives at the station when providing service in this direction. This operational constraint affects all services operating on the through-tracks of Union Station (22-27, shown as E-4 on Figure 6-8). Electrification of the corridor for up to five miles, complete with locomotive exchange yard facilities, will allow for additional Amtrak and VRE trains and possible future through-tracking of MARC trains to Virginia, eliminating congestion on the Red Line. Estimated costs for this improvement total \$43,145,800.

6.3 Other Recommended Improvements

Add and Improve Union Station Interior Signage / Conduct a Comprehensive Signage Program

Signage in Union Station, particularly in the train waiting areas, is aging and poorly placed, often not serving its intended function. Enhancing and upgrading signage throughout Union Station would significantly reduce pedestrian congestion issues at various points throughout the station facilities.

It is recommended that new signage be consistent with DDOT brands outside of Union Station, such as bicycle path signage.

Details:

- Replace outdated signs
- Improve sign placement
- Supplement existing signs with new signs
- Incorporate ADA and international symbols on new signs
- Achieve uniformity in the signage throughout Union Station

Table 6-11 Comprehensive Signage Program Cost

Description	Estimated Cost*
Implement Comprehensive Signage Program	\$720,000

*Detailed cost elements may be found in Appendix C

Implement TOD Principles

Needs met:

- Incorporate transit-oriented development (TOD) principles.
- Develop guidelines for TOD in and around multi-modal transit centers.

One of the most important steps that can be taken to ensure the continued success of Union Station as a transportation hub is the continued development of transit-oriented land-use plans, such as the Great Streets Program and other DDOT initiatives. Additionally, guaranteeing that TOD principles and criteria are used in the review of proposed developments can begin immediately. Meeting these objectives involves ensuring that adjacent developments and land-use codes encourage and promote development that is transit-supportive, requires mixed-use adjacent development, and makes certain that sidewalks and other pedestrian amenities are developed to foster high pedestrian activity and safety. Some actions that could be taken to accomplish this recommendation include:

- Stage a community design workshop on TOD principles as they apply to the Union Station Study area.
- Develop a community design workbook and guidelines for development around multi-modal transit centers, possibly including visual preference surveys and other design tools.
- Review and compare neighborhood plans to develop design typologies for a Union Station overlay zone.
- Develop a checklist including elements such as pedestrian amenities, car sharing, and transit access plans to use when evaluating adjacent developments.
- Enhance existing transit and transportation amenities, such as bike lane markings, transit shelters, and street furniture, including lighting and signals.

Table 6-12 TOD Implementation Cost

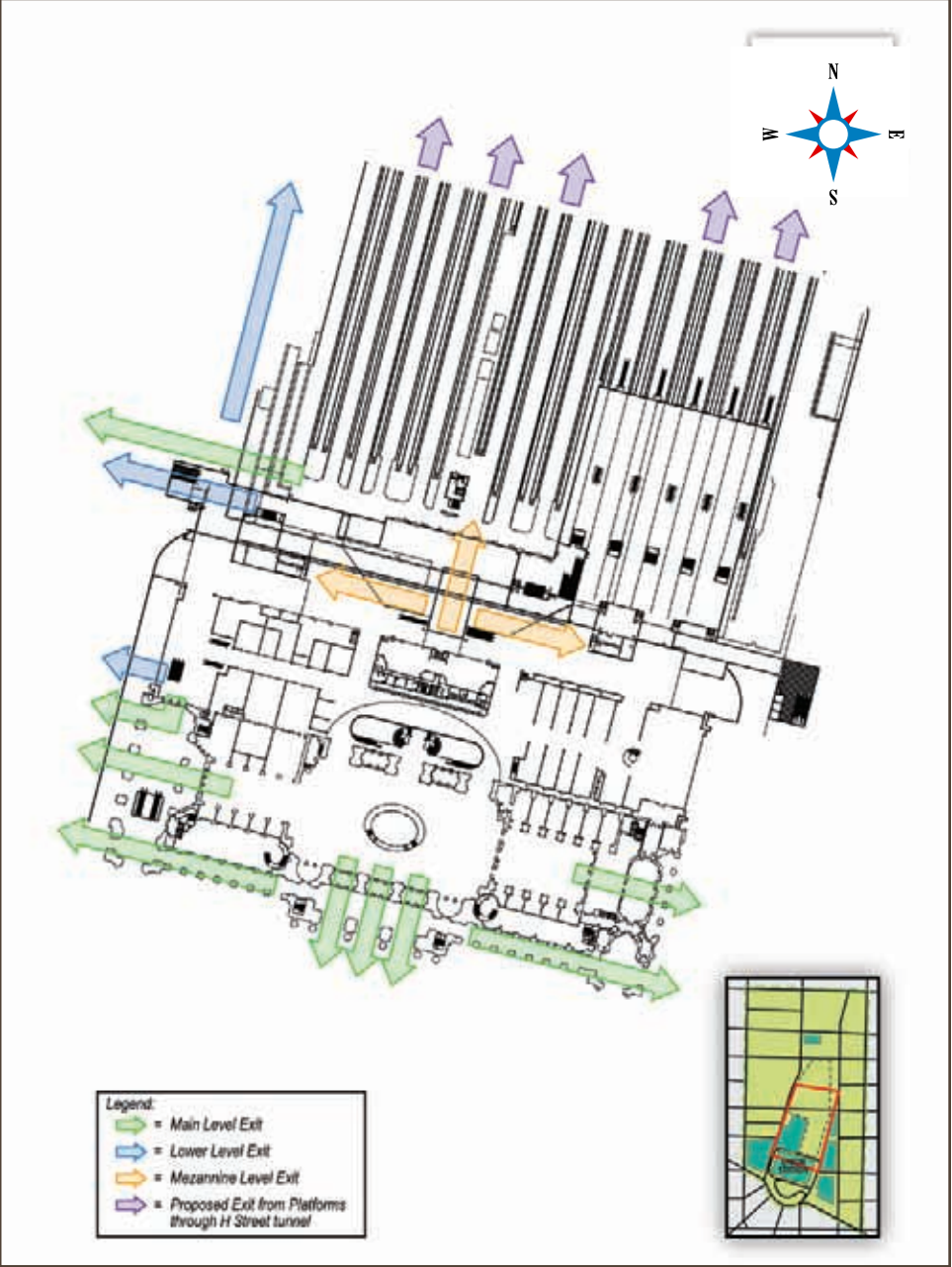
Description	Estimated Cost*
Implement TOD Guidelines	\$300,000

*Detailed cost elements may be found in Appendix C

Implement Emergency Access and Egress Strategies

In the event of an emergency near Union Station, it is critical to have well-planned emergency access from surrounding neighborhoods and buildings,

Figure 6-9 Emergency Access and Egress Opportunities



as well as Metrorail, to the station to facilitate evacuation from the area. In the event of an emergency within the station itself, it is equally as important to have planned evacuation routes from the passenger platforms and waiting areas, Metrorail station, and Headhouse and concourse areas into surrounding neighborhoods and beyond.

Emergency Access

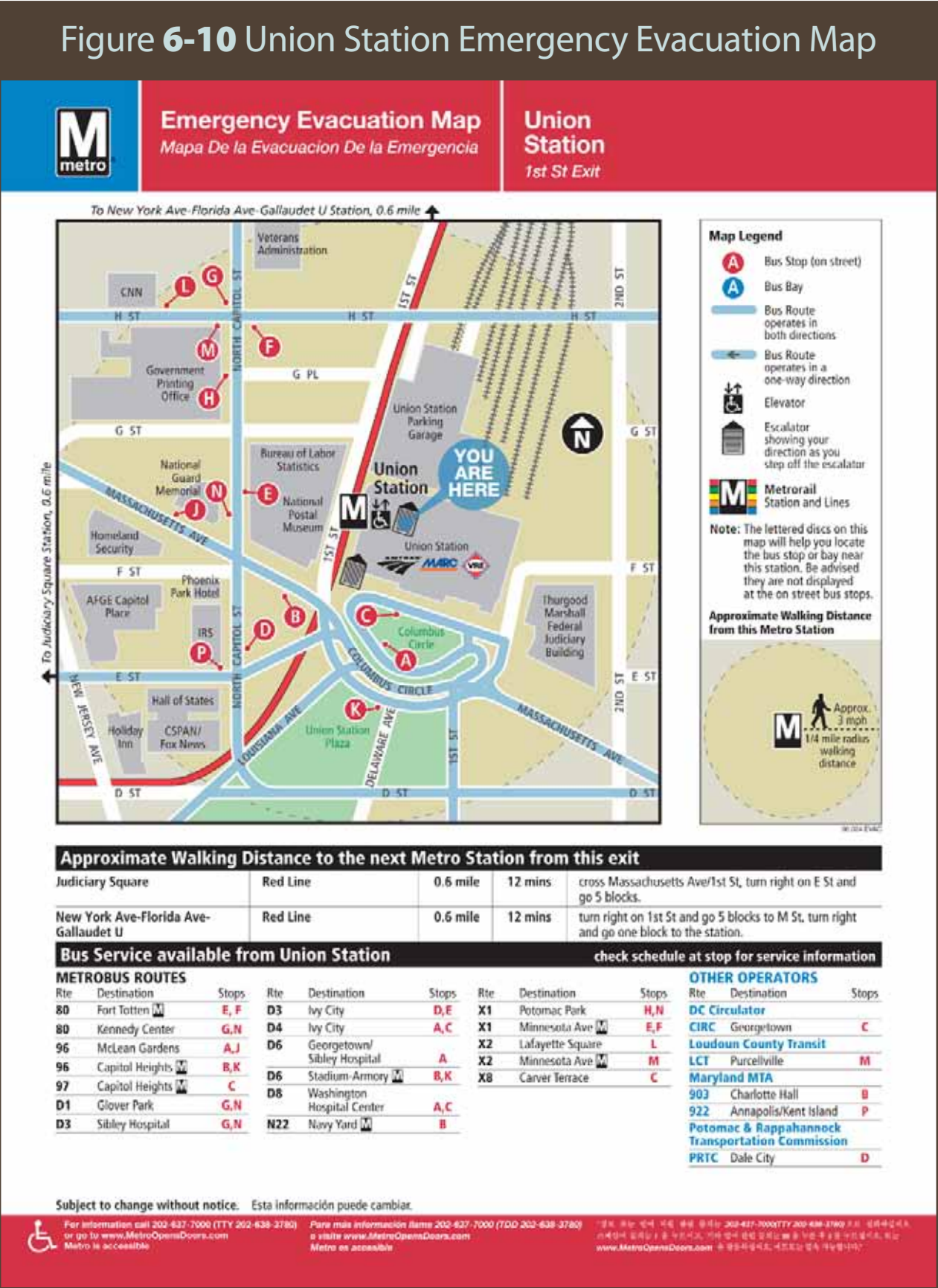
If recommended pedestrian improvements are implemented, Union Station will be more accessible from all directions. This is significant, given that in the event evacuation of neighborhoods directly adjacent to Union Station

is necessary, Union Station will likely be utilized as a gathering and staging area for evacuations. Under these circumstances, the North Pedestrian Walkway, First Street Overpass, First Street Lobby, H Street Tunnel, and an expanded mezzanine connecting the station with the parking garage will all help to provide pedestrian access from areas north and west of Union Station. The Train Concourse Connector will help facilitate smooth passage between rail tracks and the Metrorail Station. And improvements to Columbus Plaza and First Street NE will help to alleviate pedestrian-vehicular conflicts south of the station. Immediately east of the station, options are more limited; an access road was discussed and dismissed as infeasible based on security concerns that were highlighted during the charrette phase of the study. However, no matter which improvements are implemented, the Union Station Emergency Plan will continue to be the document used for all emergencies.

Emergency Egress

As stated in Chapter 4, there are currently limited emergency egress routes from the station, especially from passenger platforms. In emergencies, passengers are directed to evacuate from the platforms through the front of the station toward Columbus Plaza. Passenger egress routes to the north (to H Street) and east (through the Metrorail station to First Street) require going into the Amtrak concourse, which is typically congested. From there, passengers can use the escalators leading up to the mezzanine over the Amtrak concourse (which can create a bottleneck very quickly) or the escalators going down into the Metrorail station (which are always crowded). Another potential evacuation route would lead toward the SEC Building and could be used in emergency conditions, but this route also goes by a relatively congested area in front of the McDonalds within the Amtrak concourse.

New vertical circulation elements that are proposed as part of the North-South Concourse expansion and Mezzanine extension could help to alleviate congested conditions within the station and provide more evacuation options in the event of an emergency. On the west side of the expanded mezzanine, passengers could travel down to the concourse level or use elevators to travel to the Train Concourse Connector. On the east side of the expanded mezzanine, passengers could travel down to the train concourse, as well as up to the bus/transit deck. Along the existing concourse, an additional set of escalators would be added, alleviating the congestion experienced on the existing escalators above the Amtrak information booth. It would also be beneficial for Amtrak to study the potential for additional vertical circulation options

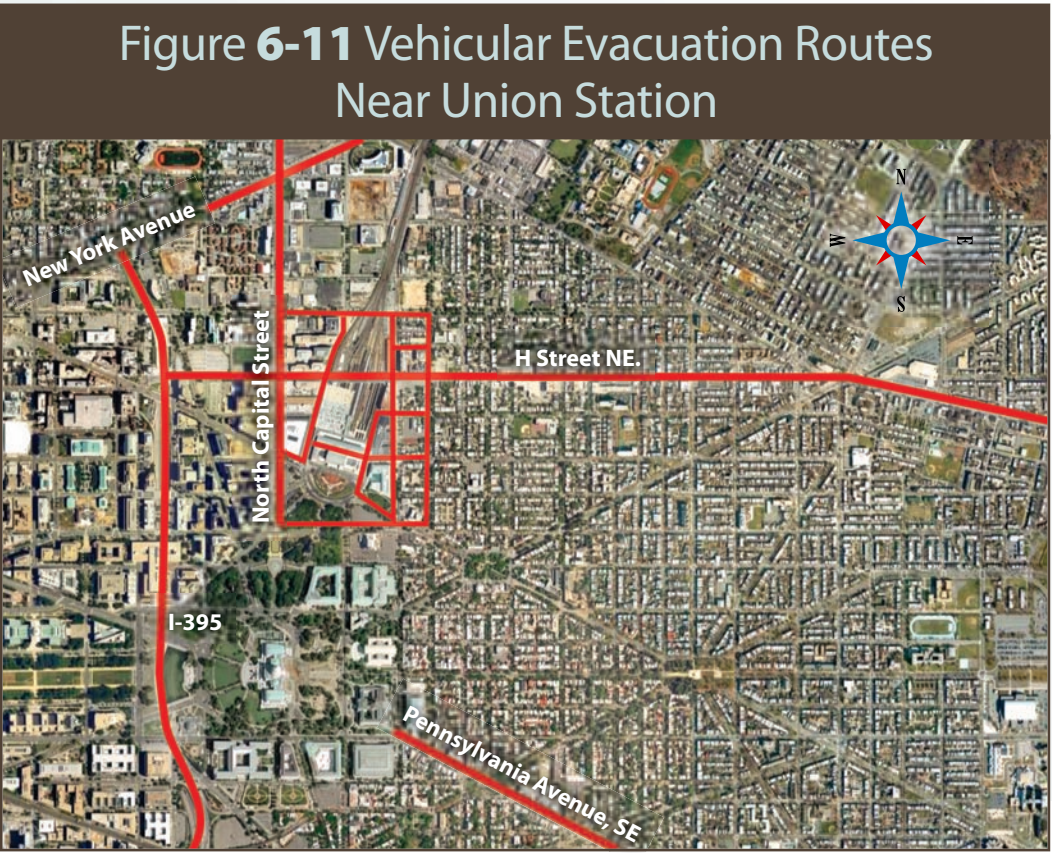


leading from the upper tracks to Burnham Place at strategic locations, as once the Burnham Place deck is constructed, there will be substantially more accessibility to H Street. The creation of these as well as the aforementioned pedestrian connections will more than double emergency egress capacity within the station.

Evacuation of Union Station

WMATA has created emergency evacuation maps for all metro stations, complete with proximate Metrobus stops and routes and other service provider stops and routes identified. Were Union Station and the surrounding neighborhoods to be evacuated, pedestrians could utilize one of fourteen different bus stops within a quarter mile of the First Street Metrorail exit, as shown on **Figure 6-10**.

Additionally, in an evacuation study completed by Precision Systems, Inc. as part of this larger feasibility study effort, New York Avenue, H Street, Pennsylvania Ave SE, I-395 and North Capitol Street are suggested vehicular evacuation routes, as shown in **Figure 6-11**.



6.4 Recommendations and Framework Goals

Throughout this chapter, recommended improvements have been linked with geographical location (context area), nature of the improvement (system), and identified needs. However, recommended improvements also tie in with framework planning goals presented in Chapter 1 and it is important to define which framework goals are supported and would be achieved through implementing particular improvements (as shown in **Table 6-13**).

Table 6-13 Planning Framework Goals and Related Improvements

Framework Goal	Related Improvements
<div>1</div> <div>Maintain and enhance Union Station as a multi-modal transportation hub.</div>	<ul style="list-style-type: none">Construct BikestationIncorporate Streetcar into H StreetReturn Catenary to Platforms 8-10Construct High level platforms for Tracks 25-26Improve Intercity Bus Connections through Construction of an Intercity Bus StationComplete Electrification of the Northeast Corridor South of Union StationImprove Connections to the Metropolitan Branch Trail
<div>2</div> <div>Promote Union Station as a fluid pedestrian environment that supports comprehensive connectivity.</div>	<ul style="list-style-type: none">Construct Train Concourse ConnectorDevelop along North Entrance/Taxi LaneExpand East-West Concourse to northExtend North Concourse to northExpand the Mezzanine LevelImprove Pedestrian Spaces along First Street NEComplete North Pedestrian WalkwayConstruct First Street LobbyConduct Metrorail Station Access StudyAdd and Improve Interior Signage
<div>3</div> <div>Ensure enhanced safety and security in and around the station.</div>	<ul style="list-style-type: none">Improve Traffic Flow and Pedestrian Safety on Columbus CircleConstruct Emergency Egress at H StreetComplete Facilities Improvements at H StreetImplement Emergency Access/Egress Strategies
<div>4</div> <div>Respect the architectural, cultural, and regional significance of the historic station.</div>	<ul style="list-style-type: none">Implement TOD Principles

View of multi-modal traffic from the east side of Union Station.



7 Implementation Consideration and Environmental Requirements

7.1 Implementation Time Frame

While some of the proposed improvements detailed in this study can be implemented immediately, others will require continued coordination between stakeholders. To aid in identifying issues that may arise when implementing improvements, this section is intended to provide a brief overview of improvements by the timeframe in which they can be implemented.

The bulk of the improvements can be implemented within 2-10 years, the primary timeframe of the study. These include substantial structural changes to the station intended to improve pedestrian flow and capacity for various modes of transportation.

Several system-wide improvements are policy-based, and could be implemented quickly: within 24 months. These include implementation of TOD guidelines encouraging transit supportive development around the station, as well as development of a program for improved signage within and around the station. Also included within this timeframe are improvements already in progress, such as construction of the Bikestation and revision of Columbus Plaza.

Finally, some improvements are categorized as long-term improvements, requiring 10-20 years to implement. These improvements require substantial coordination with stakeholders, or rely on other policies, programs or projects. An example of this would be the Northeast Corridor electrification south of Union Station, which would require substantial coordination before realization, but is a key element of the needs identified in this study.

Improvements by phase are identified in **Figures 7-1 through 7-4** at the end of this chapter.

7.2 Implementation of TOD Principles

In response to a study in 2001 showing that more than three square miles of property near Metro stations in D.C. were abandoned or vacant, Mayor Anthony Williams convened a task force to study how development and design could be used to leverage the assets that Metro provides D.C. That group, the Mayor's Task Force on Transit-Oriented Development, came up with the following definition for TOD as it is conceived in the D.C.:

Transit-oriented development (TOD) in the District of Columbia is a land use strategy to accommodate new growth, strengthen neighborhoods, and expand choices and opportunities by capitalizing on bus and rail assets to stimulate and support vibrant, compact, diverse, and accessible neighborhood centers within an easy walk of transit.

Like sustainability, TOD is not a single principle, but instead a broad spectrum of principles and activities that can lead to successful transit areas and neighborhoods. TOD principles include:

- Urban design
- Mixed land use
- Enhanced streetscapes and pedestrian amenities
- Enhanced transit

TOD principles are an integral part of the recommendations presented in this report — every improvement works to enhance the capacity of transportation service at Union Station. Several proposed improvements in particular support TOD principles:

- Connection of the Union Station Metrorail station to H Street via pedestrian walkway. This improvement would expand the catchment area of the existing Metrorail station by creating what would effectively be an additional station entrance at H Street.
- Connection to the H Street streetcar. Incorporating streetcar facilities would add an additional transportation mode connection to Union Station and connect the H Street corridor to the facilities at Union Station. Additionally, street-level transit would activate and improve the pedestrian environment of H Street.

7.3 Environmental Analysis

The improvement recommendations for the Union Station ITC have been subject to a preliminary review of the types of environmental and socioeconomic factors that may require further analysis as part of the planning process. This environmental overview serves as an initial checklist of potential impacts and environmental issues associated with transportation

recommendations. More detailed assessments of impacts would be determined as part of the project developments and design process. The overview included the following environmental and socioeconomic considerations:

Land Use. No significant impacts are anticipated as there will be no change in existing land use or changes will improve existing land use.

Geology and Soil. No significant impacts are anticipated. The current station and associated structures are built on land that has been subject to extensive grading and filling.

Vegetation. No significant impacts are anticipated. The majority of vegetation surrounding Union Station is in the form of heavy landscape.

Wildlife and Aquatic Resources. No significant impacts are anticipated.

Threatened and Endangered Species. No significant impacts are anticipated.

Hydrology and Groundwater. No significant impacts are anticipated.

Surface Waters and Waters of the U.S. No significant impacts are anticipated.

Floodplains. No significant impacts are anticipated.

Air Quality. No significant impacts are anticipated.

Noise and Vibration. Potential impacts to historic properties and other buildings in the area may occur during construction activities. A Noise and Vibration Monitoring and Protection Plan designed by the construction contractor would likely be required and be subject to review and approval by adjacent property owners (e.g., National Park Service, USRC) and the D.C. State Historic Preservation Office (DCHPO) to avoid damage to important and historic properties in the area.

Cultural Resources. Potential significant impacts (i.e., “adverse effects” under the National Historic Preservation Act (NHPA) to cultural resources are likely in the project area. The project proponent(s) will initiate consultation with the DCHPO under Section 106 of the NHPA, which may be coordinated with the National Environmental Policy Act (NEPA) compliance.

Several resources have already been identified and determined eligible for or listed on the National Register of Historic Places (NRHP), the D.C. Inventory

of Historic Sites, or designated National Historic Landmarks (NHL). There are additional unevaluated historic-age re-sources that may be eligible for the NRHP and require identification and evaluation. Intensive cultural resources surveys will be required to identify and evaluate historic properties that could be affected by the proposed improvements. Surveys for architectural/engineering as well as archaeological resources should be conducted as part of the planning process. Proposed developments must also be conducted in compliance with the Secretary of Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings to preserve the integrity of eligible for or listed local and national registers. Design plans must be reviewed and approved by DCHPO prior to implementation.

Parklands and Section 4(f)/Section 6(f) Resources. If the Union Station ITC project is funded for implementation, Section 4(f) analysis in accordance with the Department of Transportation Act will be conducted. Section 4(f) analysis will be initiated concurrently with NEPA and Section 106 once an undertaking is defined and alternatives selected.

Utilities and Infrastructure. Potential impacts may be anticipated.

Roadways and Traffic. Potential beneficial impacts may be anticipated. Additional traffic planning studies may be required.

Aesthetic and Visual Resources. Potential impacts may be anticipated. Viewshed studies may be required to reduce or eliminate encroachment from Union Station ITC elements on the existing view to and from important vistas and historic properties.

Hazardous Materials. Potential impacts may be anticipated. The current and historic use of the area surrounding Union Station suggests the potential for contamination associated with the property’s use as a rail yard. Excavation of contaminated soils for construction (e.g., underground tunnel) may require monitoring studies and analysis in addition to the potential removal and disposal of contaminated soil.

Socioeconomics. Potential impacts may be anticipated. Any increased expenses to users anticipated from improvements (e.g., more expensive parking or transit costs) may negatively impact socioeconomics. Higher costs of living in the immediate vicinity as a result of improvements to Union Station could result in changes to neighborhood demographics.

Environmental Justice and Protection of Children. No significant impacts are anticipated.

Human Health and Safety. No significant impacts are anticipated.

Sustainability and Greening. No significant impacts are anticipated.

Cumulative Impacts. There is the potential for significant cumulative effects of the Union Station ITC combined with associated projects in the area (e.g., Burnham Place construction, Columbus Circle/Plaza improvements, Union Station Bikestation).

7.4 Public Outreach

An extensive and ongoing public participation program for the Union Station Intermodal Transportation Center Feasibility Study began at project inception. This program will ensure that the public may engage fully in the development of the alternatives and the decision-making processes.

Opportunities for public participation were provided throughout the study and at key decision points. The goal is to ensure that all issues of concern are addressed and that the results are presented to the general public, interested groups, neighborhood committees, and government agencies before decisions are made. The scheduling of public involvement activities will ensure timely consideration of public input with respect to the technical work and will provide ample opportunity for an open exchange of ideas and views.

The public involvement program comprises different elements targeted to specific audiences. These elements include: a local project hotline for public inquiries and comments; a project webpage, which will be maintained throughout the study; community meetings; the creation of technical advisory and community leaders committees; two public meetings (conducted at Union Station); the distribution of project materials to public libraries and community centers within the corridor; and the preparation of visual materials.

Local Hotline

A local project hotline (202-561-3700) is active for public inquiries and comments about the study. The hotline is staffed from 9 a.m. to 5 p.m., Monday through Friday. An answering machine accepts recorded messages at all other times.

Web Page

Visit the DDOT-MTA web page at <http://ddot.dc.gov/unionstation> or <http://www.ddot.dc.gov/unionstation> for information about the study or to be placed on the mailing list to receive further information as the study progresses. A map of the study area, details of the study scope, various project documents (as they become available for distribution), information on meetings, and related links can be accessed from this site. In addition, the “Contact” link opens to an e-mail address and the “Related Links” connect to Burnham Place, H Street Northeast Corridor Transportation Study, NoMa Business Improvement District (BID), North of Massachusetts Avenue Vision Plan and Development Strategy, and Greater Washington websites.

Committees

Technical Advisory Committee

The purpose of the Technical Advisory Committee (TAC) was to provide technical input on the study; involve diverse interest groups; serve as a conduit of information to its members’ respective organizations; and inform the study, based on its members’ organizational perspective.

The roles and responsibilities of the TAC members are to attend scheduled meetings; con-firm one primary point of contact; assign substitutes and bring additional technical staff as needed; respect differing opinions and points of view; be prepared to comment on the study products in advance of meeting, when possible; participate in discussions and activities; re-view and comment on technical analysis in a timely fashion; provide proactive, solution-oriented feedback; and engage in an open and honest dialogue.

The roles and responsibilities of the DDOT team regarding the TAC are to respect and adhere to TAC members’ schedules; engage TAC members in discussion at meetings; immediately respond to concerns identified during the TAC process; consider and in-corporate advice from TAC members into the study; and provide follow-up information (minutes, etc.) to TAC members.

Originally, the TAC for the study was composed of representatives from the following: Akridge Developers; Amtrak; Architect of the Capitol (AOC); Ashkenazy Acquisition Corporation (AAC); CSX Corporation; DDOT; D.C. Deputy Mayor for Planning and Economic Development (DMPED); D.C. Office of Planning; Federal Highway Administration; Federal Transit Administration; Greyhound Lines; Jones Lang LaSalle (JLL); MTA; MARC; Michael Baker Corporation; NCPC; National Park Service; NoMa BID; United States Capitol Police; United States Commission of Fine Arts (CFA); USRC; SEC; VRE; and WMATA.

The first TAC meeting was held on May 20, 2008. Twenty-eight individuals attended, representing the following entities: WMATA, CFA; NoMa BID; Shalom Baranes Architects; U.S. Capitol Police; D.C. Office of Planning; NCPC; D. H Burnham & Company; CSX Corporation; Akridge Development Corporation; Greyhound Lines; USRC; DMPED; VRE; Michael Baker Corporation; and AOC. The goal of this meeting was for committee members to learn about the feasibility study and how their organization could help DDOT produce a quality study and inform the development of an efficient transportation network around a vital historic, cultural, and essential transportation resource. Representatives from DDOT-MTA presented an overview of the project and information on how TAC members could become more engaged. Handouts of the presentation and evaluation/comment sheets were distributed to attendees. Next steps and action items from this first meeting directed that TAC members should brief their respective colleagues; review the scope of work provided by DDOT and contact DDOT with any questions, comments, or concerns; and provide the consultant team (composed of Parsons and Del Studio) with useful data, studies, reports, and other information to support the study.

DDOT-MTA hosted a tour of the Union Station facility on August 13, 2008. This tour identified the problem areas within the station; it was attended by representatives from the following entities: AOC, USRC, WMATA, Amtrak, Akridge, NoMa BID, Greyhound, MTA, VRE, D.C. State Historic Preservation Office (SHPO), Michael Baker Corporation, and Shalom Barrens Architects.

The final TAC meeting is planned to follow review of the Draft Feasibility Report prior to its being re-leased to the general public.

Community Leaders Committee

The purpose of the Community Leaders Committee (CLC) was to provide community input on the study; involve community residents and business interest groups; serve as a liaison between DDOT and the community; and inform the study, based on community concerns.

The roles and responsibilities of the CLC participants were to attend scheduled meetings; designate one primary point of contact; share issues and concerns of residents and businesses; respect differing opinions and points of view; be prepared to comment on study products in advance of meetings, when possible; participate in discussions and activities; provide proactive, solution-oriented feedback; engage in open and honest dialogue; and share project information with their organizations.

The roles and responsibilities of the DDOT team regarding the CLC are to en-gage community leaders in discussion at meetings; immediately respond to concerns identified by community leaders; consider and incorporate advice from community leaders into the study; and provide follow-up information (minutes, etc.) to community leaders.

Originally, the CLC was composed of representatives from the following: Advisory Neighbor-hood Commission (ANC) 6A; ANC 6B; ANC 6C; 1st District Citizens Advisory Council (CAC); Better Neighborhood Association; Capitol Hill Associations of Merchants and Professionals (CHAMPS); Capitol Hill Business Improvement District; H Street Community Development Corporation; Sursum Corda Resident Council; Ward 6 Democrats; H Street Main Street; H Street Merchants Association; Near Northeast Community Improvement Corporation; Near Northeast Citizens Against Crimes & Drugs; and the Stanton Park Neighborhood Association.

Over the course of the study, representatives from the following entities were added to the CLC, as requested: 5th & M Streets Council; ANC 6A03; ANC 6D; Capitol Hill Restoration Society (CHRS); Downtown Neighborhood Association of Washington, D.C.; Mount Vernon Square Neighborhood Association; Northwest One Council, Inc.; and the Office of Council-member Tommy Wells.

The first meeting of the CLC was held on May 27, 2008. Ten individuals attended, representing the following entities: 1st District CAC, CHRS, ANC 6A, and ANC 6b04. The goal of this meeting was to inform committee members about the feasibility study and address how their organization could help DDOT produce

a quality study and inform the development of an efficient transportation network around a vital historic, cultural, and essential transportation resource. Representatives from DDOT-MTA presented an overview of the project and information on how CLC members could become more engaged. Handouts of the presentation and evaluation/comment sheets were distributed to attendees. Next steps and action items from this first meeting directed that CLC members should brief their respective constituents; review the scope of work provided by DDOT and contact DDOT with any questions, comments, or concerns; and provide the consultant team with useful data and information to support the study.

DDOT-MTA hosted a tour of the Union Station facility on September 10, 2008. This tour identified the problem areas within the station; it was attended by representatives from 1st District CAC, CHRS, ANC 6A, and ANC 6b04.

The final CLC meeting is planned to follow review of the Draft Feasibility Report prior to its being re-leased to the general public.

General Public Meeting

The first meeting with the general public occurred on May 29, 2008 in the Columbus Club at Union Station. Attendees had an opportunity to talk with project team members during the open house portion of the event, which was followed by opening remarks by Congress-woman Eleanor Holmes Norton and MTA's Deputy Director Freddie Fuller, and a presentation by DDOT. A question-and-answer session concluded the meeting.

Representatives from the following entities attended: ANC6C05, ANC6C07, ANC6C09, ANC 6b01, ANC6C, Office of Congresswoman Norton, E-Park, Downtown BID, Parsons, Holland & Knight, Larry's Cookies, USRC, Stanton Park Neighborhood Association, CHRS, Northwest One, J Street Development, Sierra Club, Beyond D.C., JLL, WHD Government, Greater Washington, Akridge, H Street Main Street, Greyhound, and Better Neighborhood Association. In addition, 11 community members/residents also attended.

The recommendations from the Draft Feasibility Report will be presented at the final general public meeting.

Community Presentations

The feasibility study was presented at Perry School Community Services Center Roundtable Luncheon of Service Organizations on June 10, 2008; to Capitol Hill Restoration Society General Body on June 18, 2008; at the 1st District Citizens Advisory Council Center on July 1, 2008; and to ANC 6A on August 11, 2008.

Agency Meetings

Amtrak

The consultant team met with representatives from Amtrak on July 18, 2008; the purpose of this meeting was to establish the procedures for data exchange. This meeting was attended by 11 Amtrak personnel (four via teleconference) and four members of the consultant team.

Greyhound

Representatives from Greyhound hosted a design meeting on October 7, 2008 to discuss the proposed Greyhound layout for Union Station. This session was attended by representatives from AAC, Akridge, SBA, Baker Donelson, JLL, USRC, Amtrak, DDOT-MTA, Parsons, and Del Studio. Greyhound presented its revised plans at a follow-up meeting on November 12, 2008.

Akridge Coordination

The consultant team has met several times with the representatives of Akridge, the developer of Burnham Place, which will be immediately adjacent to Union Station. The first meeting occurred on March 27, 2008; the purpose was to share information on project schedule, scope, coordination, and process for the Union Station ITC and Burnham Place. This meeting was attended by representatives from Akridge; the architect for Burnham Place (Shalom Baranes Architects or SBA); DDOT-MTA; as well as Parsons and its traffic subconsultant, Precision Systems, Inc. (PSI).

The second meeting was held on April 2, 2008 between Akridge, SBA, Parsons, and PSI. The purpose of this meeting was to engage in an exchange of available information and data be-tween the parties in an effort to prevent duplication of data collection efforts already carried out by both the consultants and the Akridge team. The meeting also served as a “break-out” session to the March 27 meeting between MTA, Parsons, and the Akridge team, to dis-cuss in more detail data elements of the scope and the functionality of the ITC and Burnham Place.

The third meeting was held on August 19, 2008; the purpose was, following completion of Parsons' data collection efforts, to coordinate further and share information on Union Station and the proposed Burnham Place development. This meeting was attended by representatives from Akridge, SBA, DDOT-MTA, Parsons, and Del Studio.

The fourth meeting was held on August 27, 2008; the purpose was for Akridge to debrief Parsons and Del Studio on Akridge's meeting with Amtrak on August 21, 2008. This meeting was attended by representatives from Akridge, SBA, Parsons, and Del Studio.

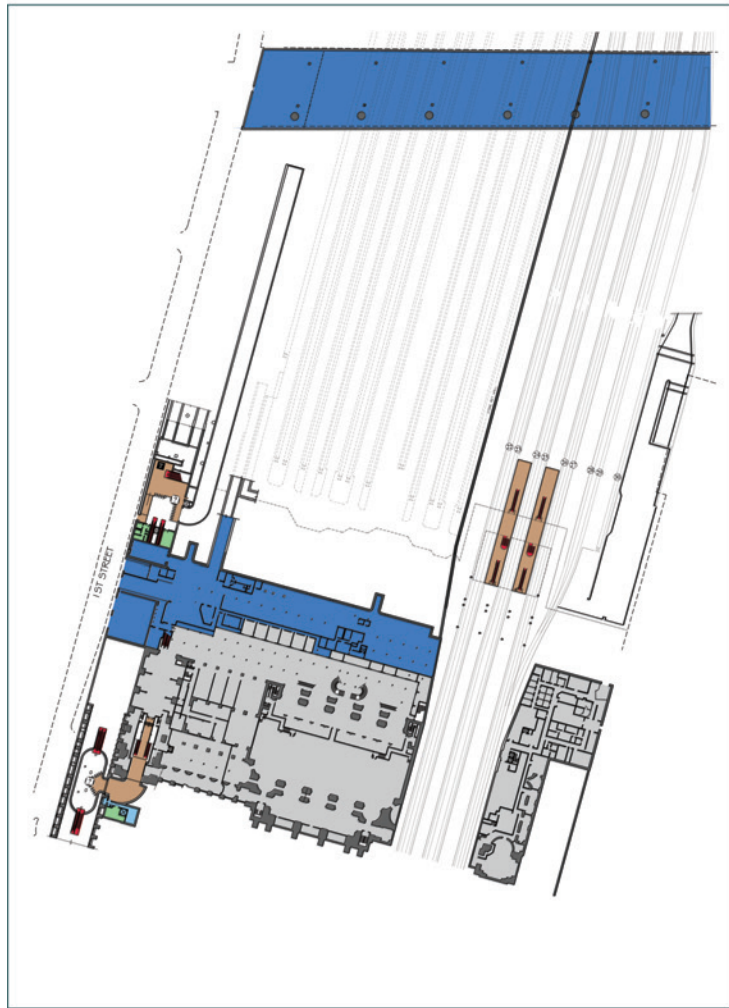
In addition, members of the consultant team attended a presentation by Gorove Slade at Akridge’s office about the Capitol Visitor Center study on June 12, 2008; and attended Akridge’s presentation to DDOT’s Transportation Policy and Planning Administration about Burnham Place on December 10, 2008.

Charrettes

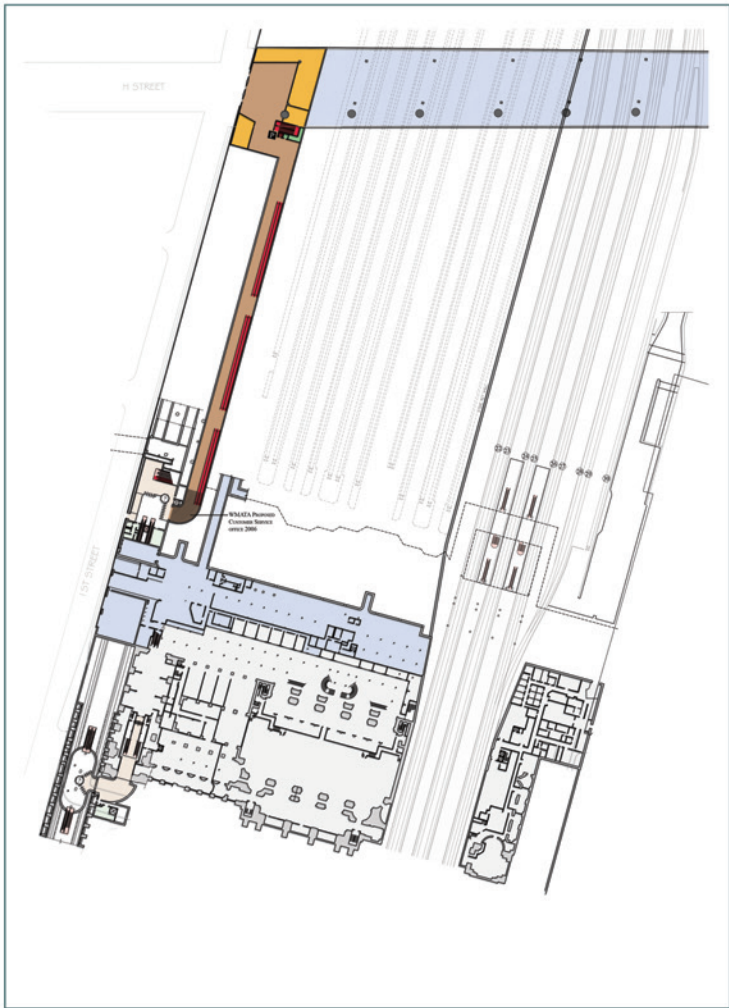
Parsons held a preliminary design charrette on October 6, 2008; it was attended by representatives from Akridge, Shalom Baranes Architects, Baker Donelson, JLL, USRC, Amtrak, MARC, MTA, DDOT-MTA, Parsons, and Del Studio.

On November 18, 2008, Parsons and Del Studio hosted a follow-up design charrette to the October 6 meeting. Preliminary concepts for Amtrak station space and circulation, taxi road-level expansion, pedestrian walkway extension and connections to H Street tunnel, and train operations and track layout were presented. Attendees included representatives from Akridge, MARC, VRE, Amtrak, Greyhound, SBA, WMATA, USRC, Baker Donelson, and MTA. Because of the amount of new information presented in the conceptual plans, it was recommended that the consultant team meet with representatives in smaller group sessions, after attendees had opportunity to review the proposed concepts. Accordingly, the consult-ant team met with USRC, AAC, and JLL on December 2, 2008; with Amtrak, MARC, and VRE on December 3, 2008; with Akridge and SBA on December 5, 2008; with Greyhound on December 5, 2008; and with WMATA on December 8, 2008.

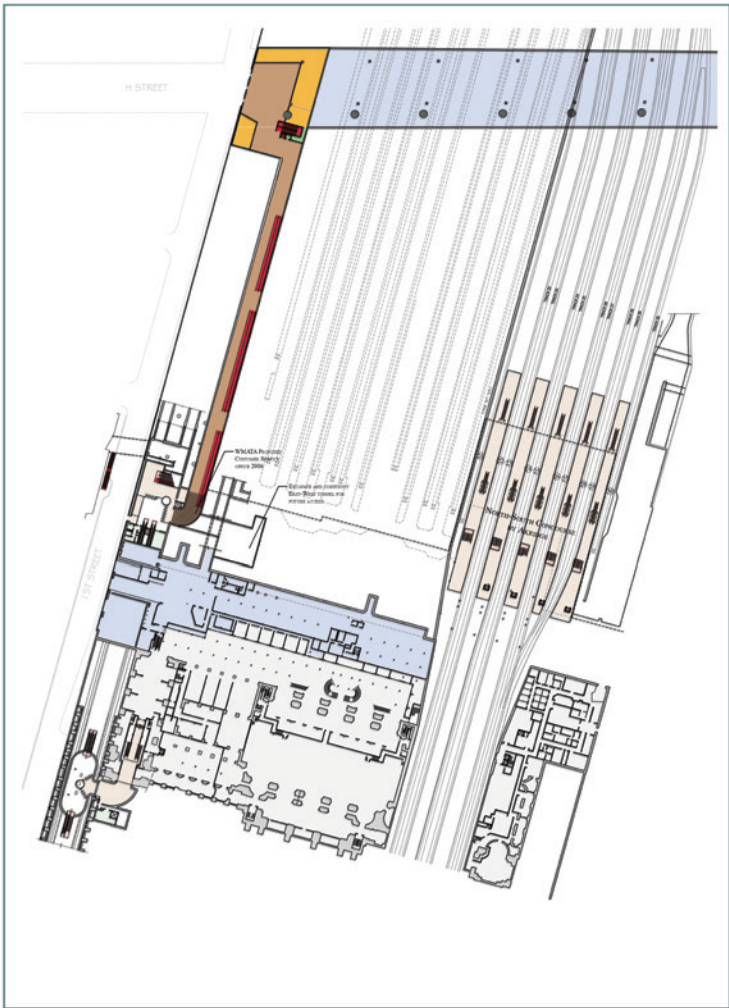
Figure 7-1 Union Station Improvement by Phase: Lower Level



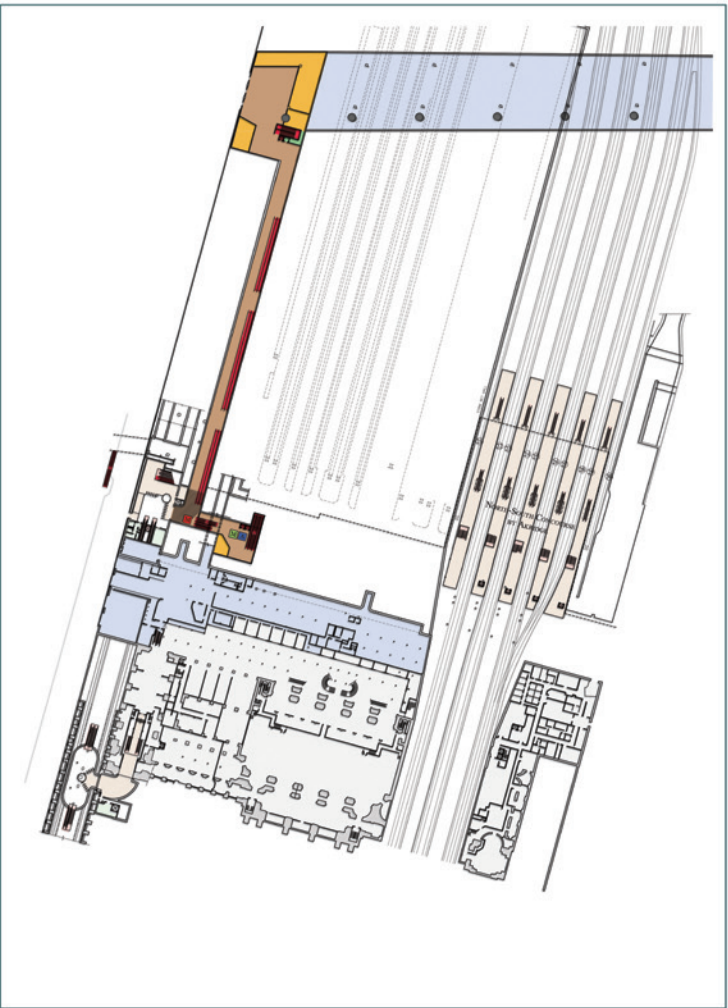
Lower Level
Existing



Lower Level
0-2 Years



Lower Level
2-10 Years



Lower Level
10-20 Years

- | | |
|--|--|
| <ul style="list-style-type: none"> Conduct WMATA Station Access Study Improve Union Station Interior Signage | <ul style="list-style-type: none"> Train Concourse Connector Tunnel North Pedestrian Walkway First Street Lobby Extend Rail Concourse to the north (North Concourse) |
|--|--|

SYMBOL LEGEND

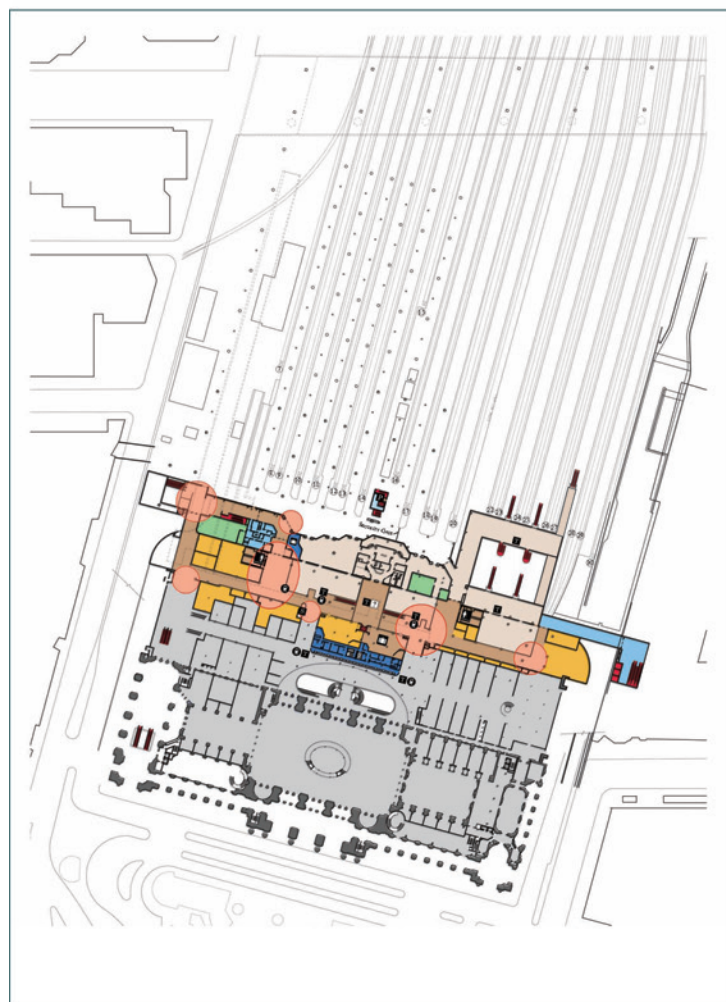
	SECURITY	COLOR CODED SIGNAGE
	BAGGAGE	M METRO SIGNAGE
	INFORMATION	A AMTRAK SIGNAGE
	RESTROOMS	M MARC SIGNAGE
	TICKET KIOSK/MACHINE	V VRE SIGNAGE
	GARAGE	G OVERTOONED
	TRAIN SCHEDULE DISPLAY	

AREA LEGEND

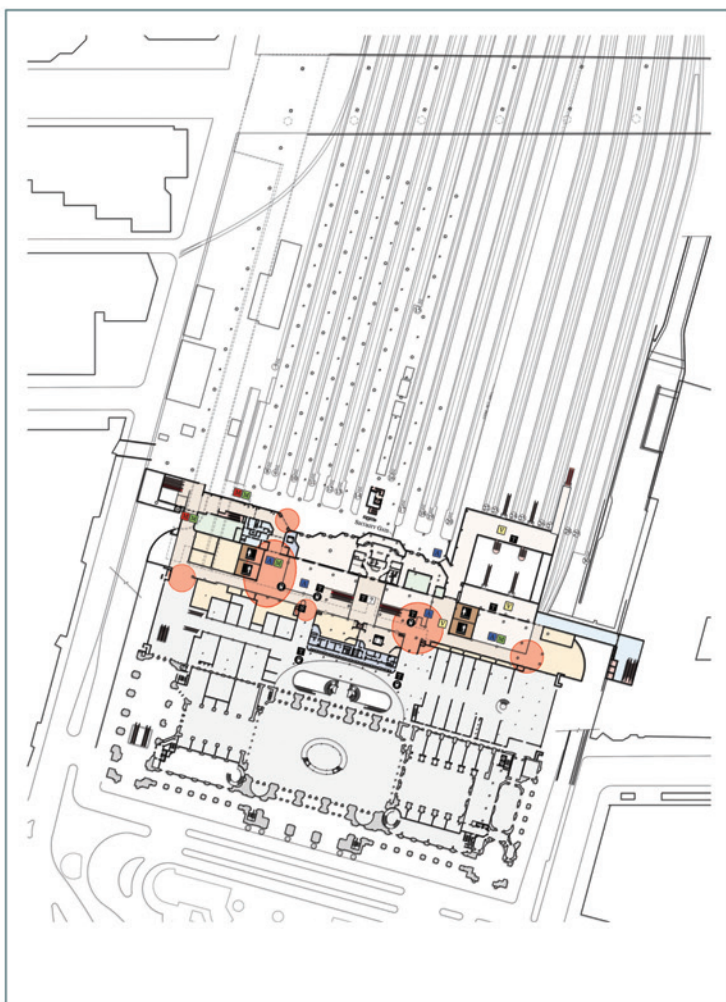
	PUBLIC AREA CIRCULATION		GENERAL PRIVATE ACCESS AREA
	RETAIL/FOOD SERVICE		MECH/ELECT. EQUIPMENT ROOM
	WAITING/ HOLDING AREA		SERVICE AREA
	UNDISTURBED AREA		EXISTING PEDESTRIAN TRAFFIC CONFLICTS
	VERTICAL CIRCULATION		
	EXISTING VERTICAL CIRCULATION		

Note: Detailed plans of station improvements appear in **Appendix B**.

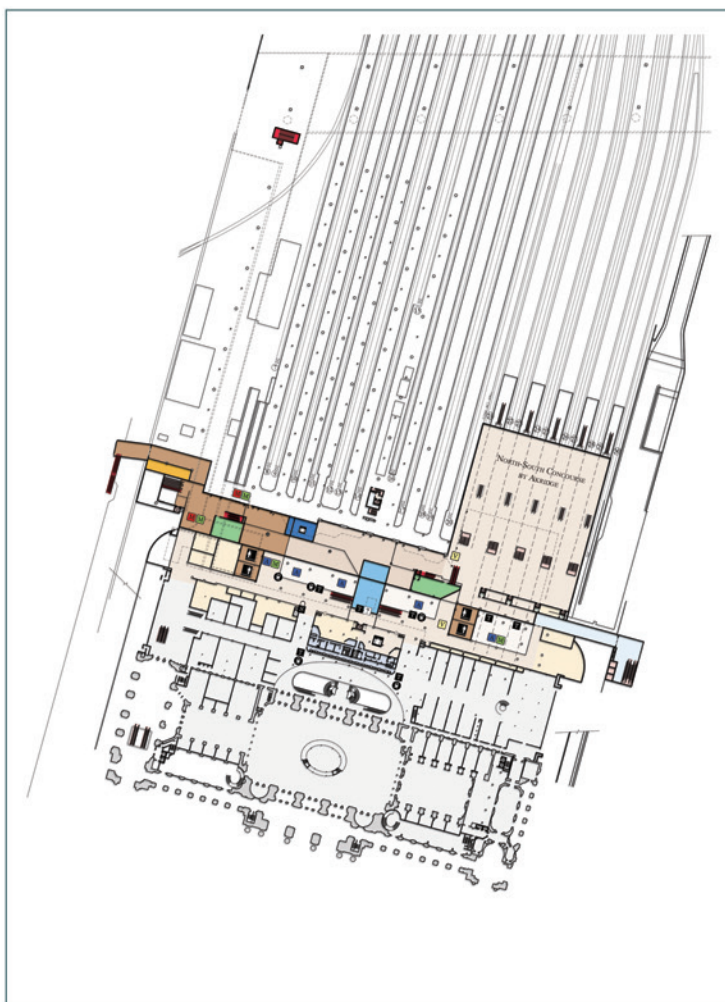
Figure 7-2 Union Station Improvement by Phase: Concourse Level



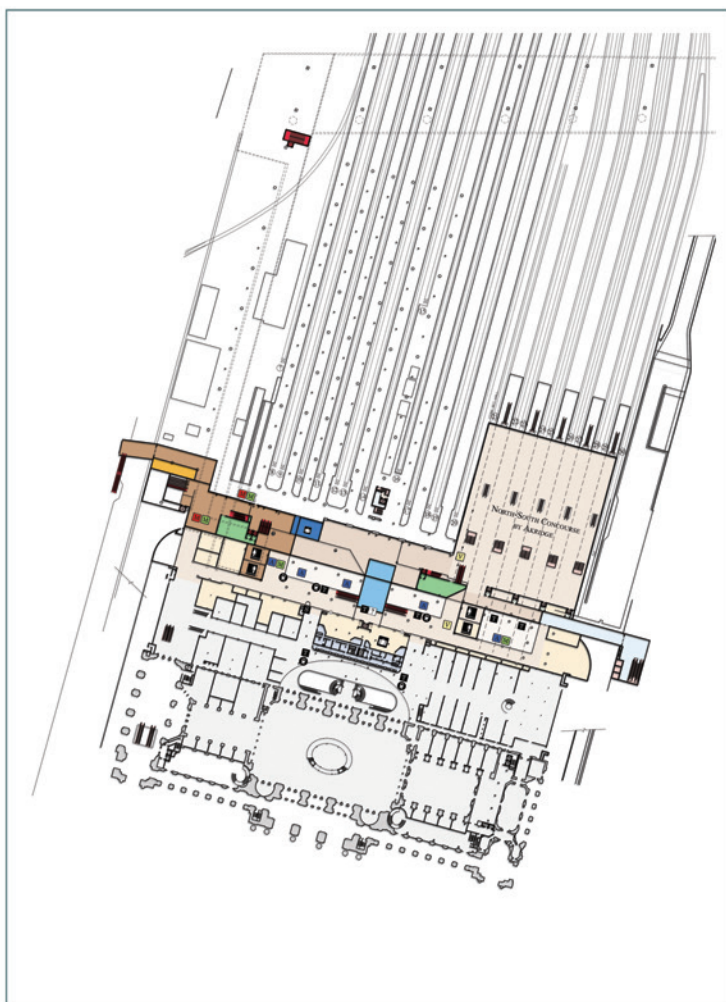
Concourse Level
Existing



Concourse Level
0-2 Years



Concourse Level
2-10 Years



Concourse Level
10-20 Years

- Construct Bikestation
- Columbus Plaza [Safety and character improvements]
- Improve Union Station Interior Signage

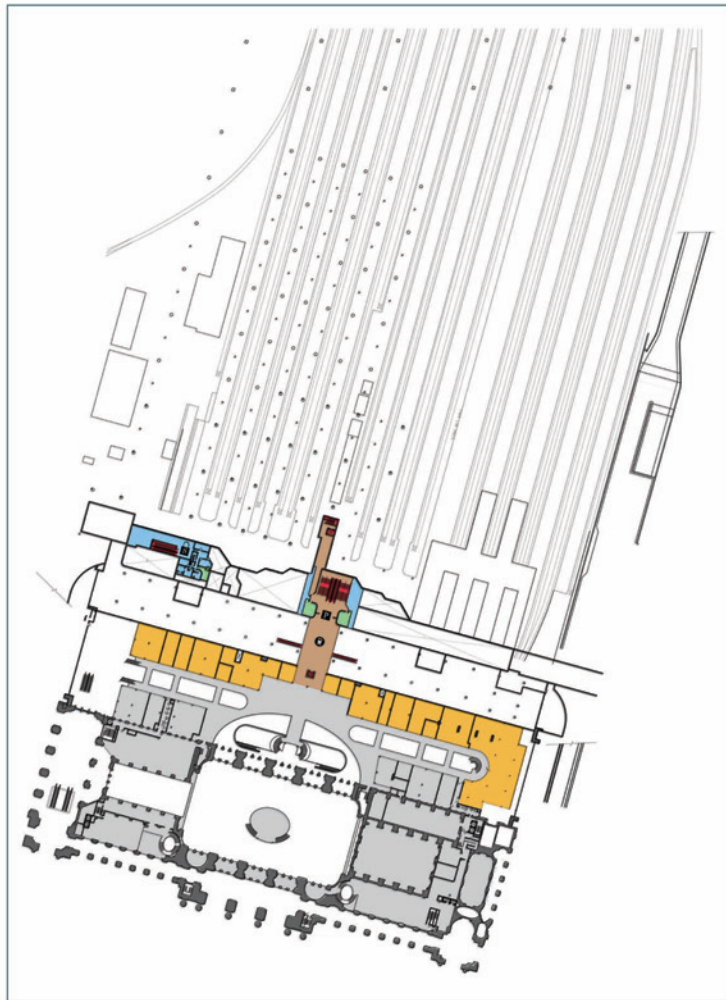
- Extend Rail Concourse to the north (North Concourse)
- Expand East-West Concourse to North
- Improved North Entrance (Escalators connecting Mezzanine)
- Catenary for Platforms 8 through 10
- Add High-level platforms for tracks 25 and 26
- Emergency Egress at H Street
- Rail Operations Facilities Improvements at H Street
- Metropolitan Branch Trail

- Northeast Corridor Electrification Through Union Stationh to Newport News

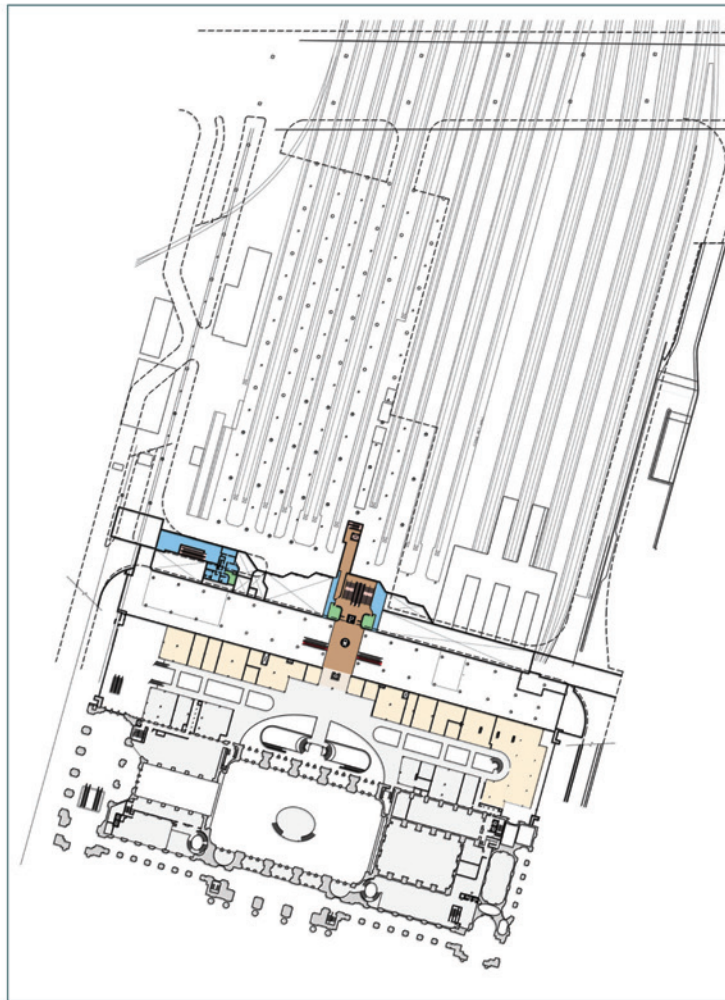
SYMBOL LEGEND		AREA LEGEND	
	SECURITY		PUBLIC AREA CIRCULATION
	BAGGAGE		RETAIL/FOOD SERVICE
	INFORMATION		WAITING/ HOLDING AREA
	RESTROOM		UNDISTURBED AREA
	TICKET KIOSK/ MACHINE		VERTICAL CIRCULATION
	GARAGE		EXISTING VERTICAL CIRCULATION
	TRAIN SCHEDULE DISPLAY		GENERAL PRIVATE ACCESS AREA
	COLOR CODED SIGNAGE		MECH/ELECT. EQUIPMENT ROOM
	METRO SIGNAGE		SERVICE AREA
	AMTRAK SIGNAGE		EXISTING PEDESTRIAN TRAFFIC CONFLICTS
	MARC SIGNAGE		
	VRE SIGNAGE		
	GETHOUND		

Note: Detailed plans of station improvements appear in **Appendix B**.

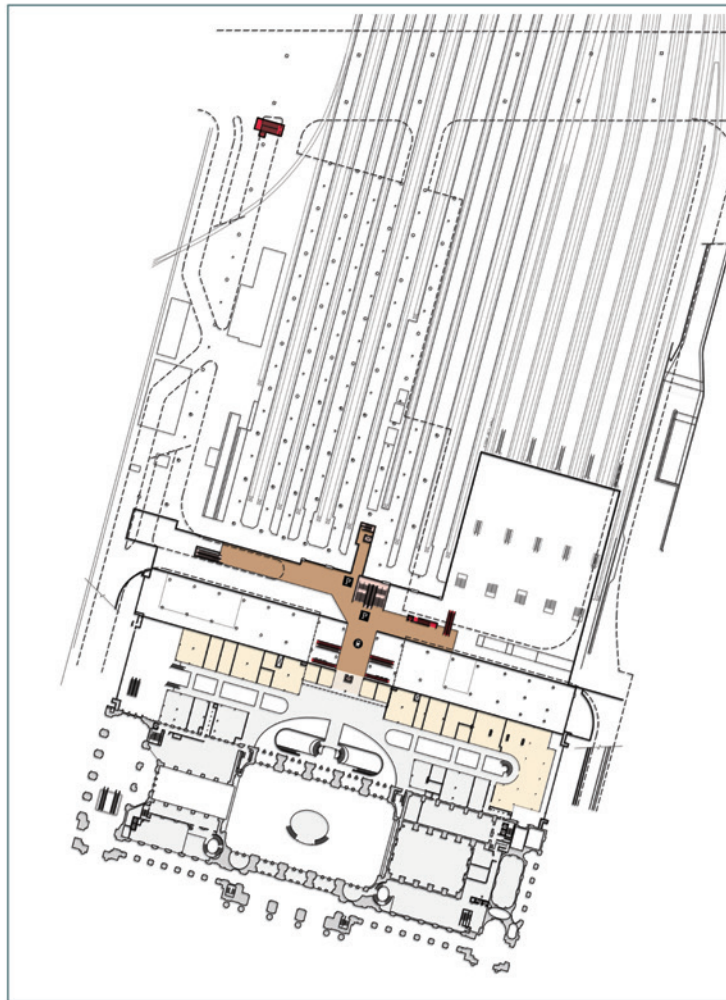
Figure 7-3 Union Station Improvement by Phase: Mezzanine Level



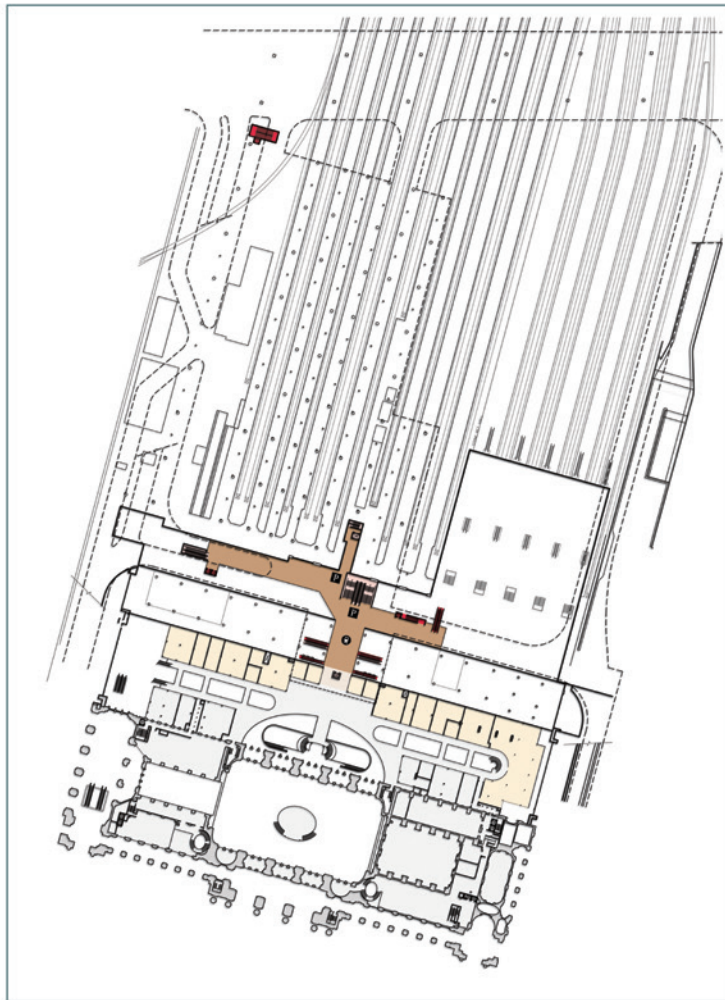
Mezzanine Level
Existing



Mezzanine Level
0-2 Years



Mezzanine Level
2-10 Years



Mezzanine Level
10-20 Years

- Improve Union Station Interior Signage

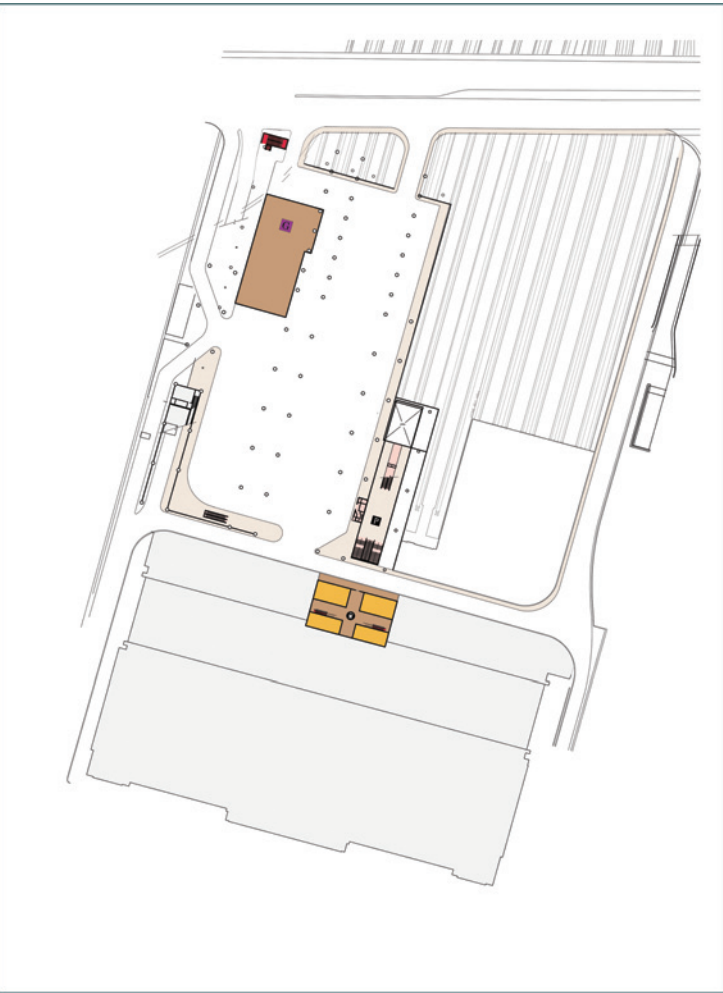
- Improved North Entrance (escalators connecting to Parking Garage)

- Expand the Union Station Mezzanine Level

SYMBOL LEGEND		AREA LEGEND	
	SECURITY		PUBLIC AREA CIRCULATION
	BAGGAGE		RETAIL/FOOD SERVICE
	INFORMATION		WAITING/HOLDING AREA
	RESTROOMS		UNDISTURBED AREA
	TICKET KIOSK/MACHINE		VERTICAL CIRCULATION
	GARAGE		EXISTING VERTICAL CIRCULATION
	TRAIN SCHEDULE DISPLAY		GENERAL PRIVATE ACCESS AREA
COLOR CODED SIGNAGE			MECH/ELECT. EQUIPMENT ROOM
	METRO SIGNAGE		SERVICE AREA
	AMTRAK SIGNAGE		EXISTING PEDESTRIAN TRAFFIC CONFLICTS
	MARC SIGNAGE		
	VRE SIGNAGE		
	OVERGROUND		

Note: Detailed plans of station improvements appear in **Appendix B**.

Figure 7-4 Union Station Improvement by Phase: Parking Garage Level



Parking Deck Level
0-2 Years

- Improve Union Station Interior Signage

Parking Deck Level
2-10 Years

- Improved North Entrance (expanded retail space)
- Metropolitan Branch Trail (path at level of existing garage)
- First Street Lobby (vertical circulation connecting H Street with First Street)
- Incorporate Streetcar into H Street
- Improve Intercity Bus Connections

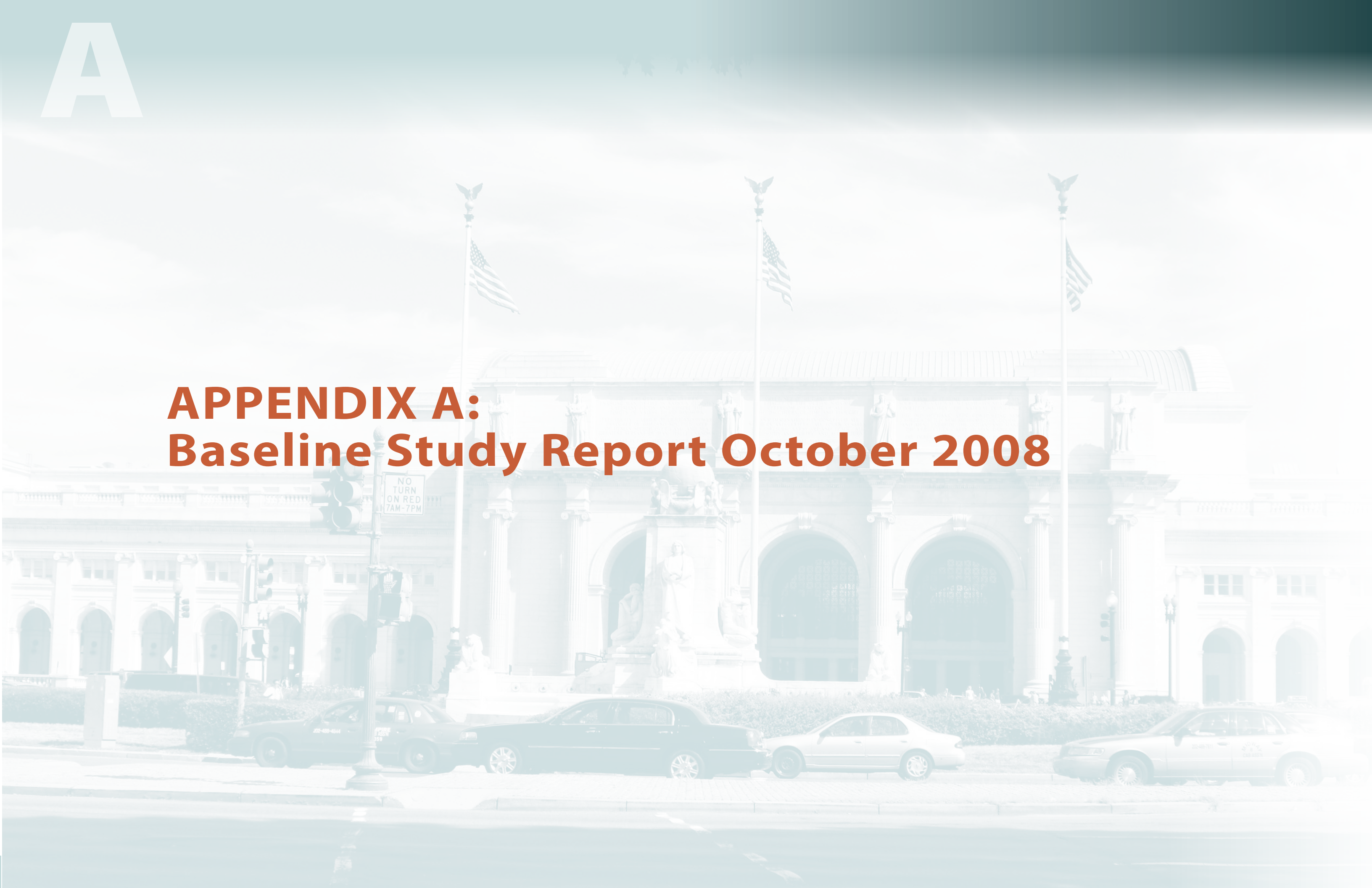
SYMBOL LEGEND	
	SECURITY
	BAGGAGE
	INFORMATION
	RESTROOMS
	TICKET KIOSK/MACHINE
	GARAGE
	TRAIN SCHEDULE DISPLAY
COLOR CODED SIGNAGE	
	METRO SIGNAGE
	AMTRAK SIGNAGE
	MARC SIGNAGE
	VRE SIGNAGE
	GREYHOUND

AREA LEGEND	
	PUBLIC AREA CIRCULATION
	RETAIL/FOOD SERVICE
	WAITING/HOLDING AREA
	UNDISTURBED AREA
	VERTICAL CIRCULATION
	EXISTING VERTICAL CIRCULATION
	GENERAL PRIVATE ACCESS AREA
	MECH/ELECT. EQUIPMENT ROOM
	SERVICE AREA
	EXISTING PEDESTRIAN TRAFFIC CONFLICTS

Note: Detailed plans of station improvements appear in **Appendix B**.

A

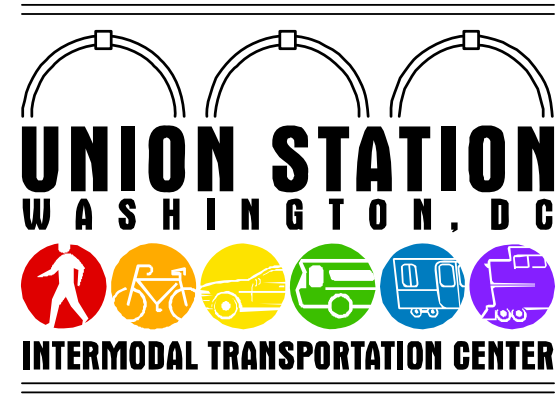
APPENDIX A: Baseline Study Report October 2008



union station intermodal transportation center BASELINE STUDY REPORT



Technical Report #1 - Baseline Studies Report



Prepared for:
District Department of Transportation

October 2008

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1 – INTRODUCTION

Union Station and the Union Station Tracks opened in 1908 as a replacement for train service which had previously used the area that is now the National Mall. Designed by Daniel Burnham of Burnham and Root in Chicago, the station saw increasing traffic through the 1950's, followed by a decline in ridership through the 1980's. In 1981, the Redevelopment Act created the Union Station Redevelopment Corporation, which was charged with developing the station into the multi-use facility it is today, serving local, regional, and inter-state travelers as well as shoppers and citizens of DC. In particular, the Redevelopment Act sought "restoration and operation of a portion of the historic Union Station building as a rail passenger station, together with holding facilities for charter, transit, and intercity buses in the Union Station Complex.

Today, Union Station is a major hub of transportation services in Washington DC, serving over 32 million people a year for travel, shopping, entertainment, and tourism. Union Station's role and function as a hub is projected to increase. There are growth plans for all of the major travel modes that serve the station, and there are plans for expansion of commercial, retail, and residential land uses at and near the station. In addressing both existing needs and future demands, the **Union Station Intermodal Transportation Center Feasibility Study** seeks to:

- Identify existing internal and external deficiencies and opportunities for improvement, including issues related to regional emergency evacuation;
- Identify and quantify future growth plans for all travel modes and uses at the Station;
- Develop an integrated and feasible plan of recommendations for both the existing facility as well as construction of a potential new Intermodal Transportation Center (ITC) on the adjacent air rights over existing rail tracks.
- The ITC would be constructed at the Akridge Development known as Burnham Place. One of the key goals of this integrated plan is to identify how the Akridge Development undeveloped air-rights contiguous and to the north of Union Station could be utilized to improve the functioning of Union Station as a Regional Intermodal Transportation Center.

A key aspect of the study is a comprehensive analysis of Union Station and its functions as a whole. This includes assessments of existing operations and needs, as well as a review of current plans by the various users of the facility. Within the context of an overall assessment, some of the specific items being reviewed and addressed by the study include examining the feasibility of:

- Constructing a new rail passenger concourse for commuter rail operations;
- Improved emergency evacuation of both Union Station and existing nearby neighborhoods;
- Improvements to the existing Amtrak passenger concourse;
- Expanded parking accommodations for tour and commuter buses;
- Integrating inter-city bus lines (i.e. Greyhound, Peter Pan, etc.) into the new ITC;
- Integrating new streetcar services;
- Developing a pedestrian connection between Union Station and H Street (and enhancing pedestrian connections on 1st street); and
- Developing a new vehicular connection between Massachusetts Avenue and H Street

The study is being developed with the participation of local community groups and other stakeholders. The study also includes a review of environmental impacts of the proposed development to the level of detail necessary to determine feasibility, and to identify environmental studies that would be needed for various recommended improvements.

Federal and local government, as well as community stakeholders, are supporting the development of the USITC via two distinct advisory groups formulated for the study: 1) the Technical Advisory Committee and 2) the Citizen's Advisory Committee.

This report, the first of several being developed for the study, describes existing uses, operations, and conditions for the various travel modes at Union Station. It provides a baseline of information to assist in informing stakeholders and a context for developing and analyzing recommendations. Follow-on re-

ports will describe the study's recommendations based on forecasted demand for Union Station Services and will include, as appropriate, project details such as estimated costs, implementation strategies, timelines, feasibility considerations, and the identification of necessary environmental and permitting requirements.

1.1 STUDY AREA

The project focuses on Union Station, located in downtown District of Columbia. The station itself is located north of Columbus Circle on Massachusetts Avenue and 1st Street NE, about one half mile north-northeast of the United States Capitol. The project limits extend from Massachusetts Avenue on the south, 3rd Street NE on the east, M Street NE on the north, and North Capitol Street on the west. The entire study area is located within the boundaries of Ward 6, Advisory Neighborhood Commission (ANC) 6C, and "neighborhood cluster" 25. Neighborhood cluster 25 includes the Union Station Neighborhood, as well as the NoMa (North of Massachusetts Avenue area), Stanton Park and Kingman Park neighborhoods. In addition to these areas surrounding Union Station, the interior is being studied, to include all public areas, as well as the rail concourse behind the station itself. **Figure 1-1** highlights the key features in the immediate vicinity of Union Station, including existing transportation facilities, proposed developments, and proposed transportation improvements.

1.2 STUDY CONTEXT

With its dual roles as Washington's major and historic transportation hub, and its continued growth as an activity and destination center, Union Station has been the direct or indirect subject of numerous studies. These studies include:

- *Columbus Plaza Redesign* - Efforts to redesign Columbus Plaza have been ongoing, with the intent of improving the aesthetic and functional qualities of the plaza.
- *Union Station Bike Station* - A multipurpose Bicycle Transit Center is being constructed at the southwest corner of Union Station.
- *District of Columbia Transit Improvements Alternative Analysis* This study investigates short, interme-

diate and long term solutions for new transit options that protect the residential and economic vitality throughout the District, with Union Station being an anchor for several options..

- *Capitol Hill Transportation Study* - This study focuses on improving safety, easing traffic congestion, and overall improvements to the transportation in the area with a focus on improving the major arterials.
- *Tour Bus Management Initiative* - Tour buses serve a large demand in DC, but they also create issues with parking, aesthetics, congestion and pollution. Citing examples from other cities, the study recommends ways that tour bus activity can be improved in the District.
- *H Street NE Corridor Transportation Study* - This study recommends several transportation improvements along H street, including better pedestrian and bicycling amenities, as well as a proposed streetcar.

Union Station is also a key feature of city-wide transportation planning efforts including the District’s Strategic Transportation Plan as well its bicycle and pedestrian plans.

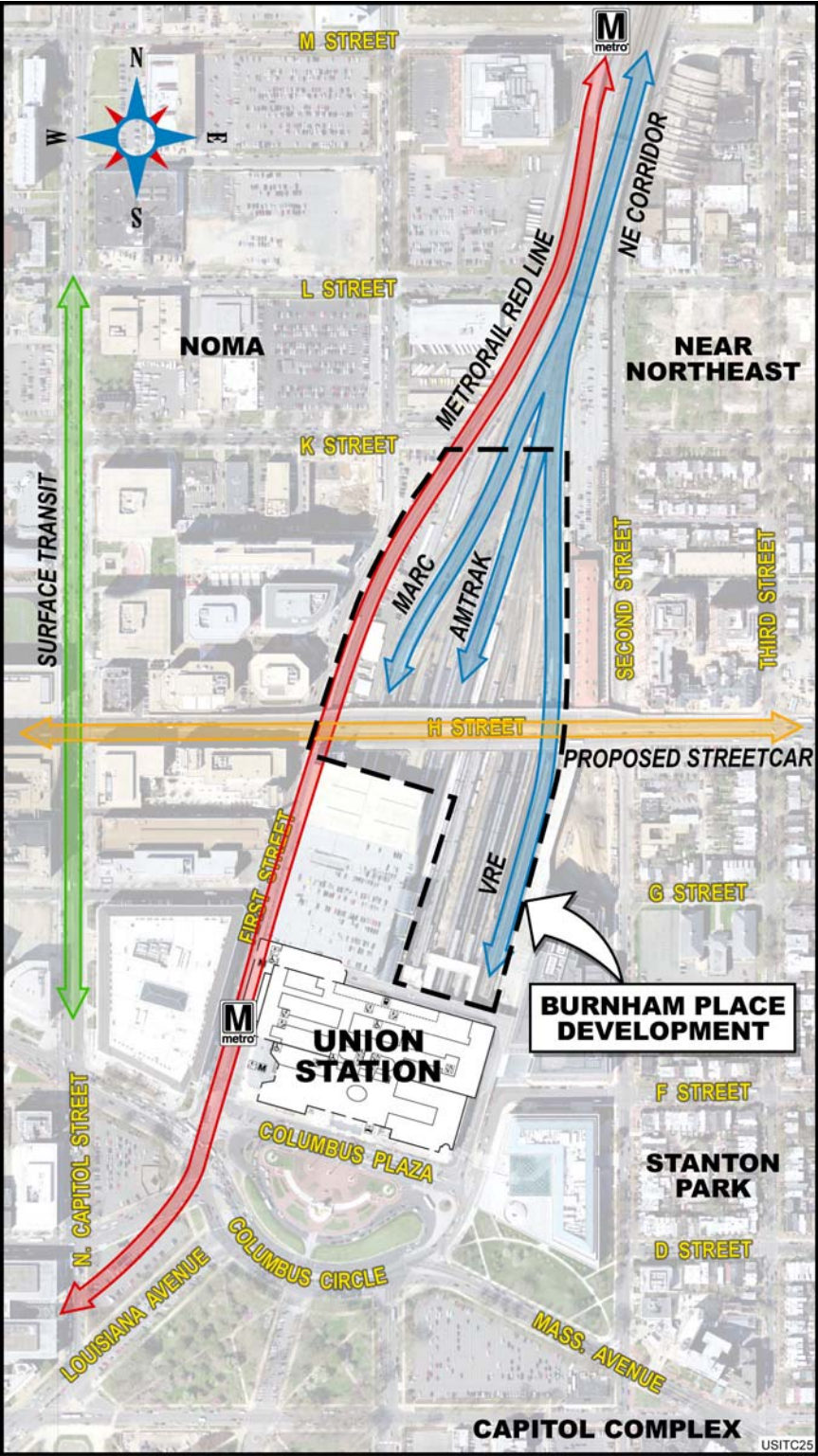


Figure 1-1. Study Area Overview

2 – EXISTING CONDITIONS

Hub: a place that is a center of activity or interest (MSN Encarta Dictionary); the central or main part of something where there is most activity (Cambridge International Dictionary of English)

Union Station is a major hub of transportation services in Washington DC, serving over 32 million people a year for travel, shopping, entertainment, and tourism. As importantly, it serves users with a variety of modes. It is the busiest station in the Metrorail system, it serves nine major City bus routes as well as the Downtown Circulator bus, it serves intercity rail, commuter rail, tour buses, and is a major pedestrian activity center. Union Station also serves a wide variety of trip types, ranging from commuter traffic to tourism. **Table 2-1** (mode table) shows the number of travel modes and trip types that are accommodated at Union Station and how they relate, truly highlighting the station's role as a key transportation and activity hub for both Washington and the region as a whole.

Key features related to transportation include:

- The station is located near major District arterial roadways including North Capitol Street, Massachusetts Avenue, and H Street.
- Walking is a key form of travel in and around Union Station, both in terms of transferring from other modes (such as commuter rail to Metrorail) as well as going to trip destinations such as work, shopping, and nearby residences.
- Located at the southern terminus of the Metropolitan Branch bicycle trail, bicycle travel is also a feature of travel at the station.
- The Union Station Metrorail station was one of the first stations on the system, opening on the same day as the very first section of Metrorail in March of 1976. The station is the most utilized in the entire Metrorail system, serving over 67,000 passengers per day.
- In terms of bus service, the area in and around the station serves nine separate Metrobus routes as well as the Georgetown-Union Station route of the Downtown Circulator. Union Station also serves a large population of tour buses that bring tourists to visit, shop and eat.
- Six commuter bus lines serve Union Station, providing service from both Maryland and Virginia.

Table 2-1. Transportation Modes Served at Union Station

	COMMUTE (WORK/SCHOOL)	LEISURE/ SHOPPING	GOODS MOVE- MENT	WORK (DELIVERY, SERVICE, ETC.)	RECREATION	TOURIST	INTERCITY TRAVEL
Single-Occupant Car	●	●		●		●	●
Multi-Occupant Car	●	●		●		●	●
Taxi		●		●		●	
Metrobus	●	●		●		●	
Downtown Circulator		●		●		●	
Intercity Bus							●
Tour Bus					●	●	●
Sightseeing Vehicle					●	●	
Commuter Bus	●						
Metrorail	●	●		●		●	
Light Rail (Future)	●	●		●	●	●	
Intercity Passenger Rail						●	●
Commuter Rail	●						
Local Delivery Truck			●				
Walking	●	●		●	●	●	
Bicycling	●	●	●		●	●	

- Union Station serves approximately 200 trains per day, with the majority of service provided between 8:00 a.m. and 8:00 p.m. Approximately 60 of these trips are Amtrak trips, with the rest comprised of commuter rail trips (Amtrak has approximately 50 arrivals and 50 departures per day).
- Union Station serves three Maryland Rail Commuter (MARC) lines and two Virginia Railway Express (VRE) lines. The majority of commuter rail passengers commute in from Maryland and Virginia, although

some passengers leave from the District to work in other locations such as Baltimore.

- Greyhound intercity bus service is provided at the bus station located just north of Union Station, serving approximately 3500 passengers a day with service that runs 24 hours a day.

Union Station is also the focus of substantial land use activity that generates “destination” traffic (trips that start or end in and near the station). The station and immediately surrounding areas include substantial amounts of residential, office, shopping, tourist, and leisure land uses, and there is anticipated to be ongoing growth with respect to these land uses. Union Station currently includes approximately 125 stores covering 213,000 square feet of retail space with an occupancy rate of over 96 percent and annual sales exceeding \$130 million. In addition, there are over 30,000 jobs within a half-mile radius of Union Station. (Source: Jones Lang LaSalle “Center at a Glance”, http://www.unionstationdc.com/uploadedFiles/About_Union_Station/UnionStation_050413.pdf, 2006 data).

NEIGHBORHOODS AND COMMUNITY OVERVIEW

Four distinct neighborhoods border the Union Station complex of Union Station and the Union Station Tracks. These include:

- NoMA (North of Massachusetts Avenue): A relatively new neighborhood situated between Massachusetts Avenue to the south and New York Avenue to the north, the North of Market neighborhood is a redevelopment area that is focused on the New York Avenue Red Line Metro Station. Over 20 million square feet of development is planned for the next 15 years, including 8000 residential units, 12,000 hotel rooms, 750,000 square feet of retail, and 10 million square feet of commercial office space.
- Near Northeast: In the study area, the Near Northeast neighborhood is a mix of light industrial and some residential zoning. Development is generally one to two stories with townhomes and row-houses providing the bulk of the housing stock.
- Stanton Park: The Stanton Park neighborhood is located due east of Union Station. In the study area, Stanton park is comprised primarily of row-houses, although there is some commercial office space as the neighborhood moves closer to Capitol Hill.

- Capitol Hill: Capitol Hill houses the Capitol Complex, with hundreds of thousands of staff arriving daily. A large portion of these staff arrive at Union station via Metro, VRE, MARC or Amtrak.

Developments in these neighborhoods, particularly in NoMA, have affected how Union Station functions, and will dictate how it must adapt to respond to changing neighborhoods around it. Developments immediately to the east of Union Station, resulted in the development of a direct connection to the east near Gate L, for example. Previously, pedestrians destined for those developments exited through the Columbus Plaza and 1st Street exits.

2.2 TRAFFIC

As with the District as a whole, the roadway system adjacent to Union Station is a basic grid system with a limited number of major diagonal avenues. Most of the roadways in the study area are classified as collector roads. These roads serve the function of collecting traffic from smaller roads and land uses and feeding higher classification roadways. The higher class roadways in the study area include North Capitol Street (principal arterial), H Street (principal arterial), Louisiana Avenue (principal arterial), Massachusetts Avenue (principal arterial west of North Capitol Street and minor arterial east of North Capitol Street), and E Street (minor arterial). Current daily traffic volumes on roadways classified as arterial and above and near the study area are shown below:

- North Capitol Street: 21,000 vehicles per day
- H Street: 27,000 vehicles per day
- Massachusetts Avenue: 23,000 vehicles per day
- Louisiana Avenue: 8,000 vehicles per day
- E Street: 11,000 vehicles per day
- Interstate 395: 48,000 vehicles per day
- Constitution Avenue: 21,000 vehicles per day.

2.2.1 Existing Street Network

To support more detailed analysis of traffic operations, vehicular turning movement counts were conducted for this study at 26 intersections within the study area. The traffic counts were conducted at each location for a consecutive 30-minute period between 7:00 and 9:00 a.m. and between 4:00 and 6:00 p.m. (coinciding with the morning and evening peaks). Data collection was conducted between March 11th 2008 and March 28th 2008 on Tuesdays, Wednesdays, or Thursdays. Counts are taken on the mid-week days because traffic on these days represents

typical weekday traffic (pre- and post-weekend traffic spikes are avoided). Within the study area, traffic flows exhibit directional peaking: i.e., inbound traffic is heavier in the morning peak and outbound traffic is heavier in the evening peak.

Figure 2-1 shows levels of service (LOS) at key intersections in the study area. LOS is a standard traffic engineering method of grading roadway operations. LOS methodologies use a grading scale from A to F, with A representing excellent traffic flow with minimal delays, E representing operations at or near capacity, and F representing failure in traffic operations and very high levels of delay. In general, LOS D or better are considered desirable. The discussion below summarizes traffic volumes and operations during the morning and afternoon peak periods.

Morning Peak

During the morning peak hours, H Street, Massachusetts Avenue/Columbus Circle, and North Capitol Street carry the heaviest traffic through the study area with peak hour volumes in excess of 1000 vehicles per hour. Traffic flow is heaviest in the southbound direction along North Capitol Street and in the westbound direction along H Street and Massachusetts Avenue/Columbus Circle.

The LOS results show that intersections along the high volume corridors generally operate at LOS C, D or E. Along these corridors, the intersection LOS, in most cases, is due to the high traffic demand on the through movements. Conversely, in the non-peak direction, approaches operate at LOS A, B or C. Additionally, intersections on the study area streets that are predominantly residential also operate at LOS A, B or C, except at locations where they intersect with higher volume corridors.

Afternoon Peak

As experienced during the morning peak, H Street, Massachusetts Avenue/Columbus Circle, and North Capitol Street carry the heaviest traffic through the study area in the afternoon peak, with peak hour volumes in excess of 1000 vehicles per hour along the major corridors. The heavier travel direction is the reverse of what is experienced in the morning peak period. Traffic flow is heaviest in the northbound direction along North Capitol Street and in the eastbound direction along H Street and Massachusetts Avenue/Columbus Circle.

The operational analysis for afternoon peak conditions shows that intersections along the high volume corridors generally operate at LOS B, C, D or E and slightly better than the morning peak conditions. The improvements in LOS are primarily due to overall lower traffic volume demand. For example, at H and North Capitol Streets, LOS improves from an E in the morning to a D in the evening due to a nearly 10% reduction in overall traffic volume, and a more equal distribution of traffic on all approaches. At North Capitol and K Streets, the overall intersection traffic demand reduces by approximately 13% with a 21% reduction on the critical approaches (southbound approach during the AM peak, northbound during the PM peak). In general, intersections on the more residential streets in the study area operate at LOS A, B or C, except at locations where they intersect with higher volume corridors.

2.2.2 Circulation

A large number of travel modes are accommodated by the current circulation plans and patterns in and near Union Station, with varying levels of success. The schematic in **Figure 2-2** illustrates some of the external circulation patterns at Union Station. As described in the previous section and shown in the LOS summaries in Figure 2-1, traffic operations within the Columbus Circle area in front of Union Station are generally adequate. Current circulation issues, therefore, relate more to the sometimes confusing and indirect travel patterns than to high levels of peak period traffic congestion.

Vehicular access to Columbus Plaza is gained via Columbus Circle on the east side of Union Station. The most common path for egress necessitates completing the loop of Columbus Plaza, exiting at the east end, and then joining westbound traffic on Columbus Circle to Massachusetts Avenue. Before exiting, a connection is available that allows for a complete loop around the plaza. A bi-directional circulation road surrounds the west, north and east sides of Union Station, and provides access to the parking garage north of the station and to 1st Street NE west of the station. The circulation road can be accessed on the east where Columbus Plaza splits off of Columbus Circle; on the west it is accessed from Columbus Plaza near the southwest corner of Union Station; on the north access is provided directly from the parking garage. Columbus Circle continues past the point where Columbus Plaza and the circulation road spur off, and leads directly into eastbound F Street, NE.

As discussed, buses may access the parking garage from the circulation road, usually via Columbus Circle on the east. Buses, however, may also enter the garage by using the access road on the west side of the station. Alternatively, they may enter the garage from the north via eastbound H Street, NE. When leaving the garage, buses can exit to the north via eastbound H Street or by way of the circulator road (west), connecting to southbound 1st Street, NE. Passenger cars may access the parking garage using the same routes as buses, though they use a separate entrance to the north that allows for access and egress from both directions of H Street.

Taxi cabs circulate Union Station by entering Columbus Plaza in their designated lane, make drop-offs then proceed towards the rear of the station via the circulation road to queue on the east side of the station to make pick-ups.

Directly in front of Union Station, three lanes are available for use by various travel modes. The lane closest to the station is reserved for taxis, the middle lane is for passenger pick-up and drop-off by the general public, and the lane furthest from the station is used by buses and for traffic going through and bypassing the passenger pick-up area. While this outside lane is used for buses, parking, standing, or idling by any vehicles, including buses, is not allowed in this lane.

2.2.3 Parking

Parking is an integral feature related to travel for the many modes of travel at Union Station. Associated with parking are also short-term waiting areas for taxis and layover locations for buses. Combining all of these, the parking at Union Station encompasses longer-term parking for those taking trains out of the District, mid-term parking for those who come in and use Union Station as their starting point for travel within the District (including those who take sightseeing tours from Union Station) or for business in the area, shorter-term parking for those visiting the shops, restaurants, and movie theaters in Union Station, and immediate-term holdover parking for taxis, buses, and for deliveries.

The predominant facility for parking at Union Station is the parking garage located directly north of the station, though street parking is available nearby. The garage is open to the public, though Union Station patrons may have their parking validated for a reduced fare. Street parking is a mixture of metered and permit parking. The garage at Union Station is a five level structure with the four upper floors designated for pas-

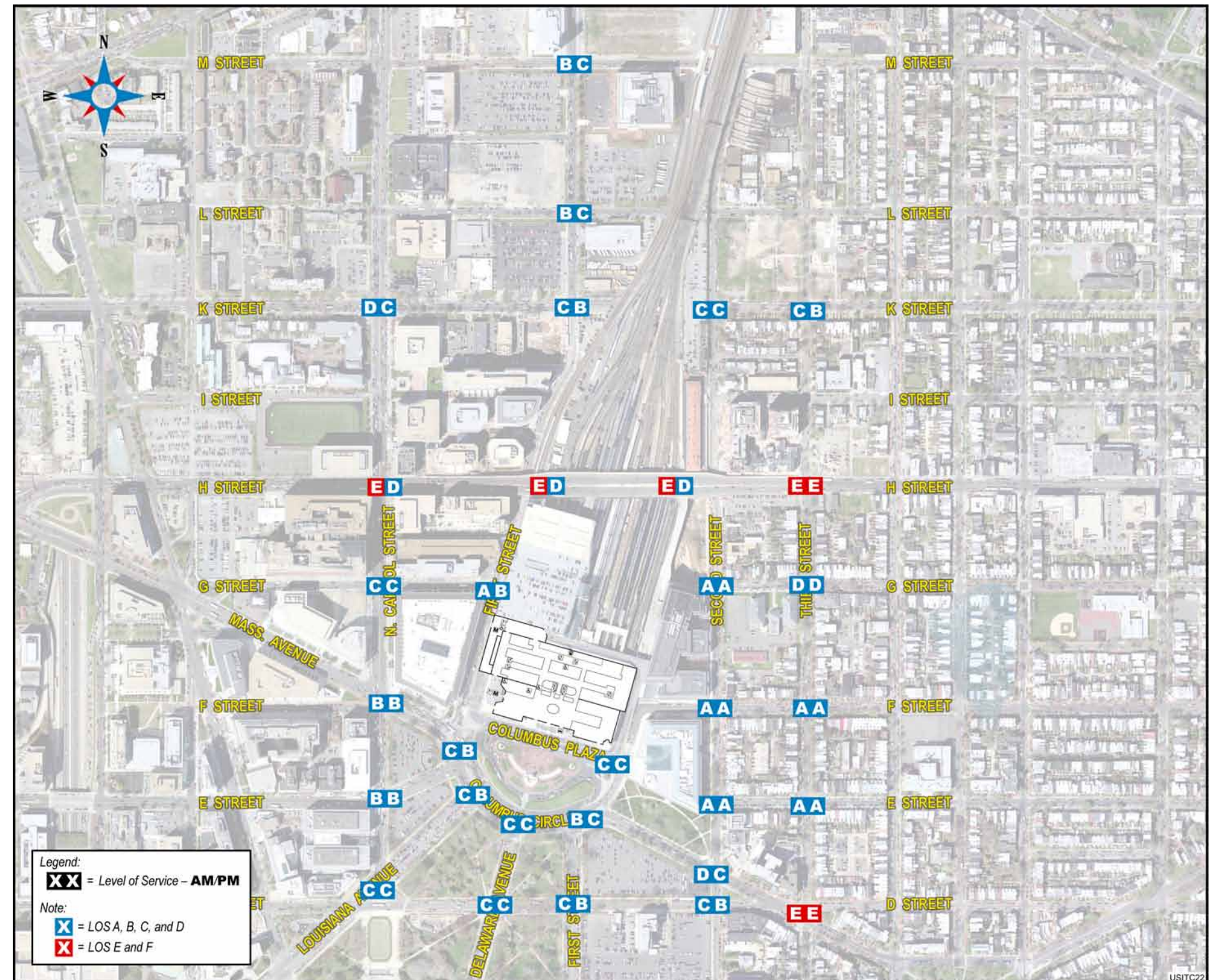


Figure 2-1. Levels of Service

senger vehicles and the lowest floor reserved for buses. The total capacity is 2,194 parking spaces, 90 of which are bus spaces, however, only 55 of the bus spaces are actually used.

Parking data provided by the Union Station Redevelopment Corporation (USRC) shows that the Union Station parking garage experiences an overall average occupancy rate of 77% (leaving 515 spaces available) during a typical week. Union Station experiences its highest parking volume on Wednesdays with an average occupancy rate of about 83% (372 available spaces). Conversely, Union Station experiences its lowest parking volume on Mondays with an average occupancy rate of about 66% (755 available spaces). Passenger car parking does not show any significant seasonal trends, and overall, the parking garage is accessed about 49,600 times per month, or about 1,600 times per day. Bus parking on the other hand, exhibits a dramatic increase during the spring tourist season. Detailed tables on parking space utilization and ticket counts for the parking garages are included in the Appendix A, Tables A-through A-4.

The pricing rates for the structure begin at \$6 for the first hour and up to \$19 for 24 hours. Validation is available for patrons who utilize the services inside Union Station, allowing for reduced rates up to the first three hours. Parking rates for tour buses are \$20 between 7AM and 7PM, and \$10 between 7PM and 7AM. Buses have in-and-out privileges throughout the time periods.

On-street parking is available near Union Station, with metered parking available as close as Columbus Plaza or 1st Street directly adjacent to the station. Metered parking is available on many of the streets in the study area, most with 2 hour limits. Unmetered parking is available, predominantly on the residential streets such as 2nd and 3rd Streets. The unmetered parking also has a two-hour limit, unless a Zone 6 resident parking permit is provided. In total, on-street parking, which is illustrated in **Figure 2-3**, provides about 440 metered parking spaces, and about 570 non-metered parking spaces within the study limits. The non-metered spaces include approximately 330 resident permit spaces, and 240 other spaces which encompass loading zones, school zones where parking may be restricted on school days, and other zones where parking is not permitted during busy traffic periods. Additionally, just south of the study limits, nearly 350 street parking spaces are available to special permit holders.

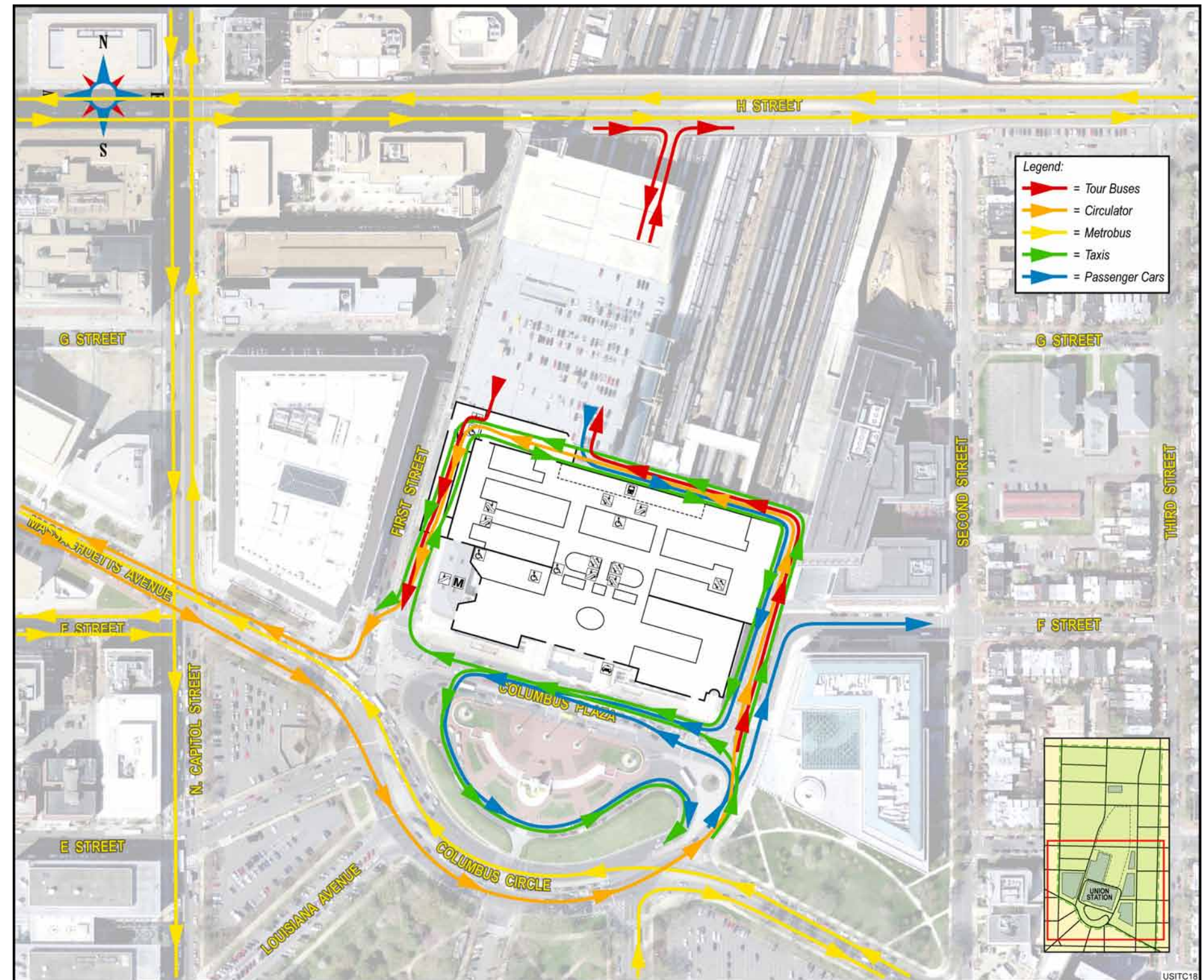


Figure 2-2. Typical Vehicular Circulation Patterns around Union Station

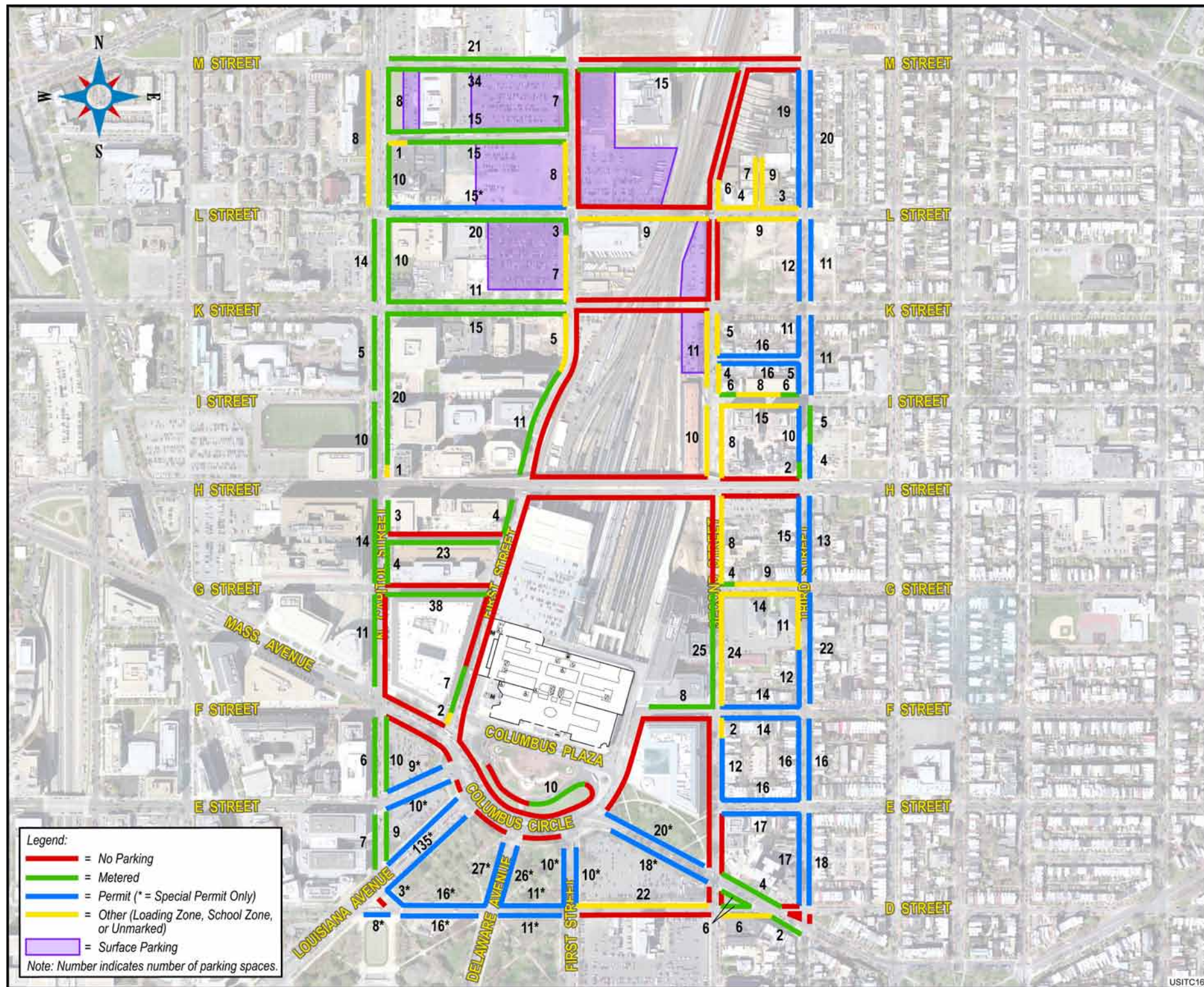


Figure 2-3. On Street Parking in the Vicinity of Union Station

2.3 PEDESTRIAN AND BICYCLE ACTIVITY

2.3.1 External Pedestrian Movements

Pedestrian flows in and around Union Station include trips that consist of shifting from one mode of travel to another (i.e., commuter rail to Metrorail), as well as trips that are ending or starting in the study area. Some of the existing issues related to pedestrian travel in Union Station come from the mixing of these two types of trips. An example of this is the concentrated and highly directional pedestrian flows in the peak period going from commuter rail to the Metrorail station mixing with those who are milling around, such as shoppers or those waiting for Amtrak trains or tours. Additional detail on pedestrian flows is included in this section.

In general, the morning peak periods exhibit pedestrian flow moving away from Union Station in nearly all directions, with the trend reversed in the evening rush period. Delaware Avenue and the western portion of 1st Street NE are the two most heavily used pedestrian routes, while Massachusetts Avenue (in both directions) and E Street NE also carry significant pedestrian volumes in the morning. Delaware Avenue and the other streets south of Union Station are heavily traveled paths in the afternoon, returning people to the station from the Capitol Hill area. Two locations where patterns are opposite to the morning-outbound/evening-inbound trend are the sidewalks along the Thurgood Marshall Federal Judiciary Building north of Massachusetts Avenue and F Street NE. In the morning, both of these paths carry people from the residential areas east of the station to the various transportation options at Union Station, or beyond to the employment areas west of the station; later in the evening the trends reverse, though the paths along the Thurgood Marshall building remain significantly heavy throughout the day. **Figure 2-4** shows pedestrian counts that highlight the heavy pedestrian flows on 1st Street, NE, going both directions on Massachusetts Avenue, and to/from E Street.

Pedestrian conflicts with traffic occur in two major areas in the vicinity of the station. At the stations' southeast corner, pedestrian traffic travelling to the SEC and other new developments to east conflicts with traffic travelling up the east ramp to the Union Station garage.

On the station's west side, traffic exiting the station on to narrow 1st street often conflicts with vehicular travelers as workers travel from Union Station to office buildings in NoMA. This street sees the highest daily volume of pedestrian flow.

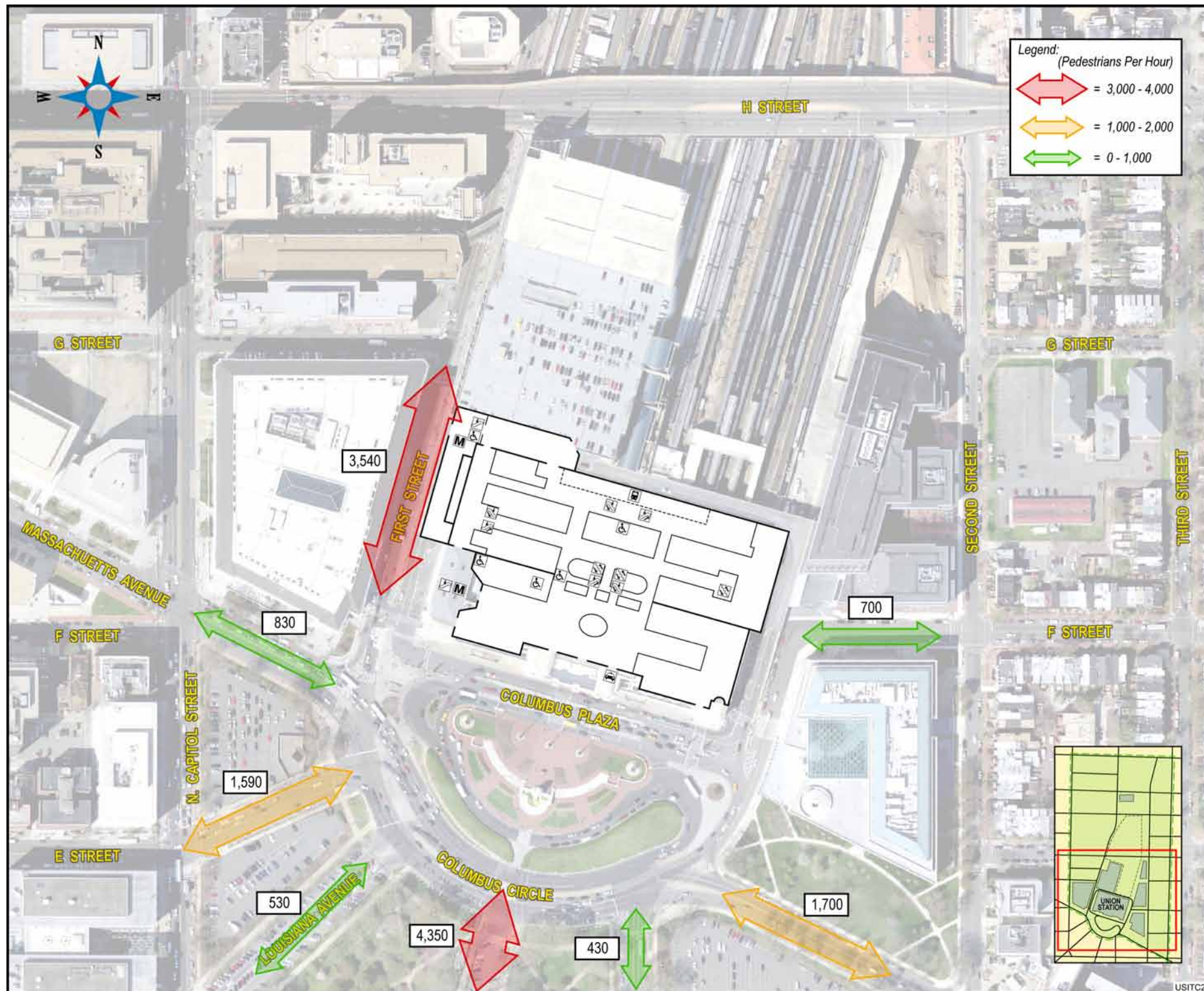


Figure 2-4. One Hour Pedestrian Volumes on Roads Adjacent to Union Station

While the main stream of pedestrian traffic exiting Union Station exits through the main entrance, this traffic is diffused by Columbus Plaza, creating more manageable pedestrian and vehicle interaction. This interaction is expected to be improved with the proposed renovation of Columbus Plaza, described in Section 1.

2.3.2 Internal Pedestrian Movements

Inside Union Station, pedestrian movements may appear somewhat random at first glance, but distinct patterns can be discerned upon closer examination. A significant portion of pedestrian traffic within Union Station occurs in waves or platoons. These platoons originate when and where people alight from public transportation. The largest groups are the most orderly, predominantly commuters originating from the commuter trains and the Metrorail. Smaller platoons of people coming from tour buses also move through the station, albeit with patterns that are much more sporadic than commuters. These platoons may range in size from 20 to 50 people from a tour bus, to well over 200 from a commuter or intercity train.

The schematic diagrams in **Figure 2-5** and **Figure 2-6** illustrate some of the major flow paths and highlight some of the potential areas of pedestrian congestion.

Commuter Movements

The most predictable path for a pedestrian platoon comes from intercity or commuter trains. As people alight from the trains, they exit the rail concourse and consequently enter Union Station at the various gates on the northern edge of the station. Passengers from the MARC trains generally come from the westernmost tracks, while VRE passengers come from the easternmost, or long haul tracks of the tracks. A vast majority of the commuter rail passengers immediately exit Union Station either by foot or by Metrorail. Pedestrian egress moves in several directions, with a majority going toward 1st St, Massachusetts Avenue, or the Capitol. In the morning, when the commuter arrivals occur in fairly rapid succession, the pedestrians efficiently move through the station with little hesitation as to which path to take. While some people will deviate from the group to purchase food or use other services at Union Station, the platoon as a whole moves to exit the station as soon as possible. When a Metrorail train arrives in the morning, groups of people move to exit the station onto the street network expeditiously; either by exiting directly to 1st Street or moving

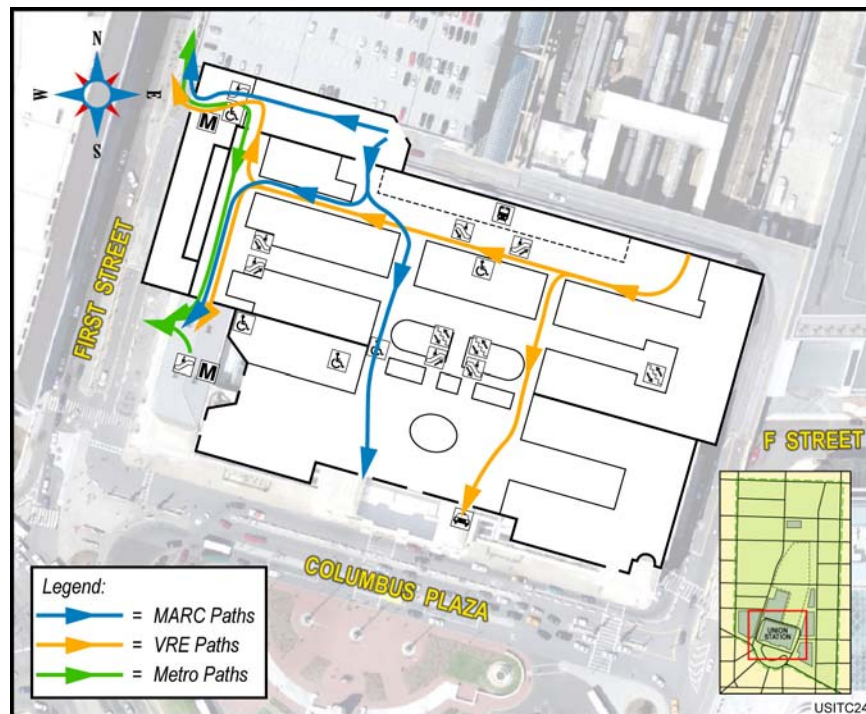


Figure 2-5. Morning Rush Period Pedestrian Platoon Paths

south through Union Station itself if leaving Metrorail via the north mezzanine, or by going directly to the streets from the south mezzanine of the Metrorail station. During the afternoon rush period, patterns are reversed with people moving from either mezzanine of the Metrorail, through Union Station, and directly toward a transfer to an commuter train. During non rush periods, the platoon of people exiting Metrorail or commuter trains is diluted with casual commuters, tourists, and mall shoppers, making the platoon effect much less pronounced.

Tour Group Movements

The tour group platoons move much less consistently than intermodal transfer groups, but their movements still follow trends, based primarily around the food court. Part of the unpredictability of tour group platoons stems from the fact that they will enter at multiple entrances to Union Station, though the mezzanine entrance from the parking garage is often a prime location. Once inside, these tour groups, often middle- to high-school aged students, will gather for instructions from chaperones, and then proceed to the food establishments on the street or lower levels. Later, the group will reconvene for head counts before returning to their tour bus, but in the meantime, smaller groups, generally less than 20, can be seen strolling around Union Station, waiting for the rendezvous time. The gathering of these student groups have been observed to

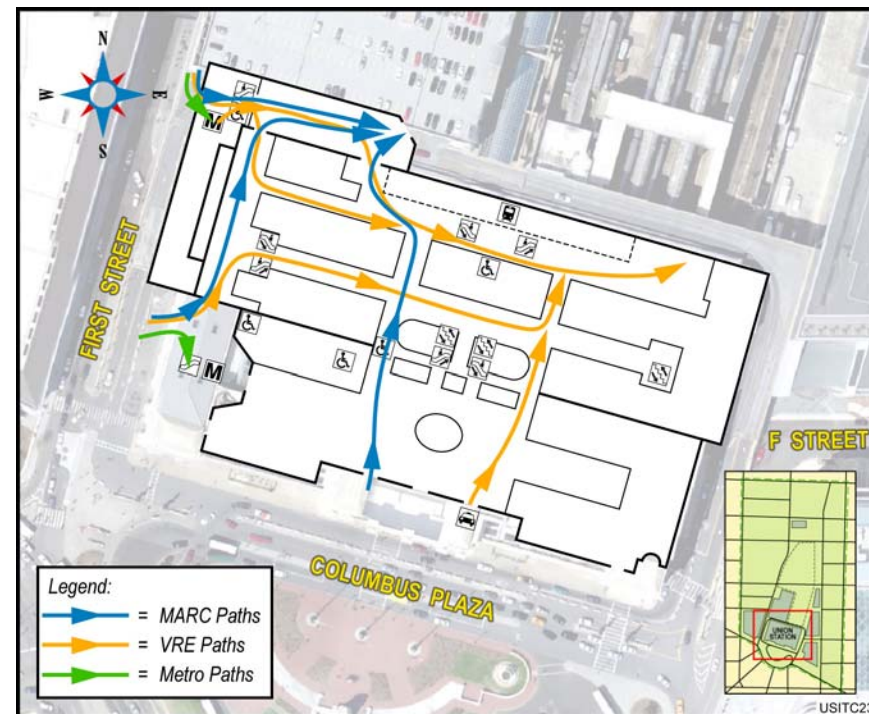


Figure 2-6. Evening Rush Period Pedestrian Platoon Paths

occur in the main hall, in the central portion of the station near the Amtrak ticket counters, on the mezzanine overlooking the food court, and most pronounced, on the mezzanine near the exit to the parking garage. The major pedestrian flow patterns are sometimes constricted at these meeting points, though in general the meeting locations are out of the path of the heaviest intermodal transfer corridors.

Though passageways become congested with high pedestrian densities when groups of people move through the station, significant issues arise when the mass of people encounters choke points within the station. Common bottlenecks inside Union Station include escalators and stairways, merge points for groups of unloading train passengers, and passageways blocked by idle tour groups or queued passengers.

The observed pedestrian flow conflicts and choke points within Union Station throughout the day, shown in **Figure 2-7**, include:

- Location A: Masses of people, predominantly from commuter or intercity trains in the morning, form long queues at the single down escalator, heading toward Metrorail or the exit toward 1st Street.
- Location B: Masses of people, a combination of pedestrians from 1st Street and offloaded passengers

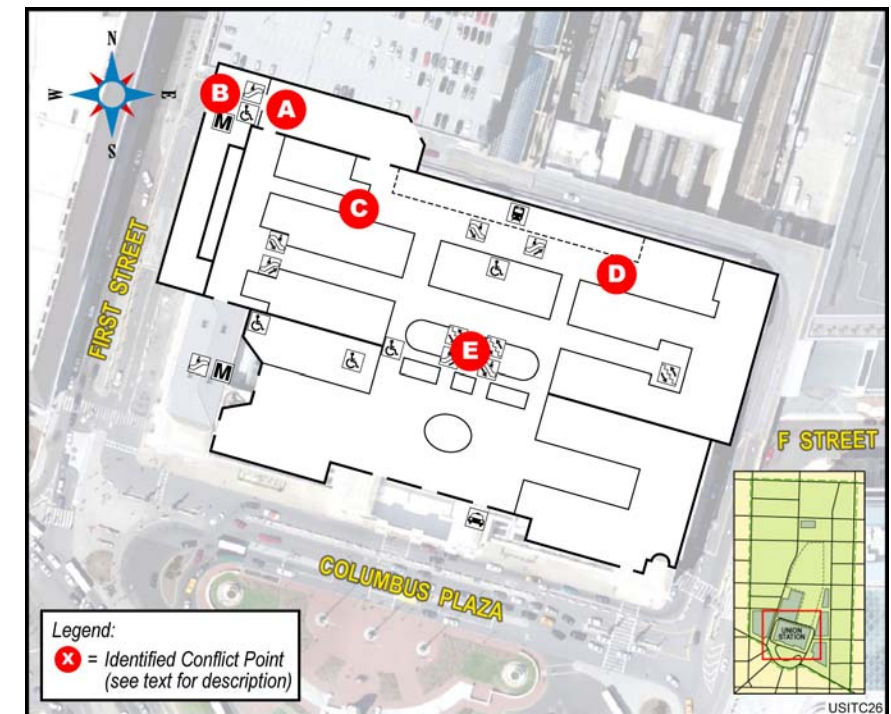


Figure 2-7. Observed Platoon Conflict Points and Bottlenecks

from Metrorail, form long queues on the single up escalator, most heading to commuter rail platforms in the afternoon.

- Location C: Platoons of passengers arriving on concurrent MARC and VRE train arrivals merge together in a single corridor, typically seen in the morning peak.
- Location D: Passengers waiting in line to access commuter train platforms are constricted in this passageway, impeding platoon of people arriving at Union Station from VRE trains
- Location E: Typically, tour groups move en masse up or down the stairs between the mezzanine, street level, and food court level of the station, blocking movements in the opposing direction.
- Location F: (not shown in Figure 2.7, northern end of mezzanine level) Tour groups rendezvousing before or after their trip to Union Station block access between the parking garage and the mezzanine.

2.3.3 ADA Issues

On the outside of Union Station, the nearby area contains some features that may impede travel by those with disabilities. A major issue found was that of poor quality curb ramps. Many ramps were found to be narrow, not lined up properly, lacking clear indication (i.e. no detectable warnings or 'truncated

domes'), and in some places, uneven paving on and around the ramps. Inside, narrow escalators are provided between levels of the station, though they are supplemented by elevators.

2.3.4 Bicycles

The current bicycle facilities in the vicinity of Union Station are in a transitional state, with significant changes scheduled for the very near future. The bicycle network for the study area and adjacent streets, shown in **Figure 2-8**, contains as a primary feature a portion of the Metropolitan Branch Trail, which is planned to connect Silver Spring, Maryland to downtown Washington, with spurs and connections to other bicycle facilities in the region. The trail runs along 1st Street NE, where a bicycle route which continues down Louisiana Avenue is already in place; another leg runs along 2nd Street NE, coming into the east side of Union Station.

At Union Station, there is currently bicycle parking located at the southwest corner, with storage provided for a maximum of about 50 bicycles, however, cramped conditions limit the number of bicycles that can actually be parked. Elsewhere around the station, individual bicycles are often locked to parking meters and sign posts. During field visits, the bicycle parking rack appeared to be over half full before the morning rush and after the afternoon rush periods, and nearly completely full in between. To alleviate these bicycle parking issues, plans have been made for a bicycle station at Union Station, a concept of which is shown in **Figure 2.9**, located in the same area as the current bicycle parking racks. The station will include sheltered parking for about 150 bicycles, a bicycle repair facility, bike rentals and accessories for sale. Construction is scheduled to begin with in the next few months.

During field counts of pedestrian traffic at the southwest corner of Union Station, it was observed that during peak periods, over ten bicycle riders per hour accessed the bicycle racks outside of Union Station. In general, bikes were parked in the morning and departed in the evening. Other data collected around Union Station showed as many as 20-30 bikes per hour headed towards Union Station near the eastern portion of Massachusetts Avenue and F Street NE in the morning, and up to 40 per hour moving away from Union Station on Columbus Circle/Massachusetts Avenue during the afternoon, though it was unknown if this was bicycle traffic associated with, or simply bypassing, Union Station.



Figure 2-8. Map of Bicycle Trails in Study Area

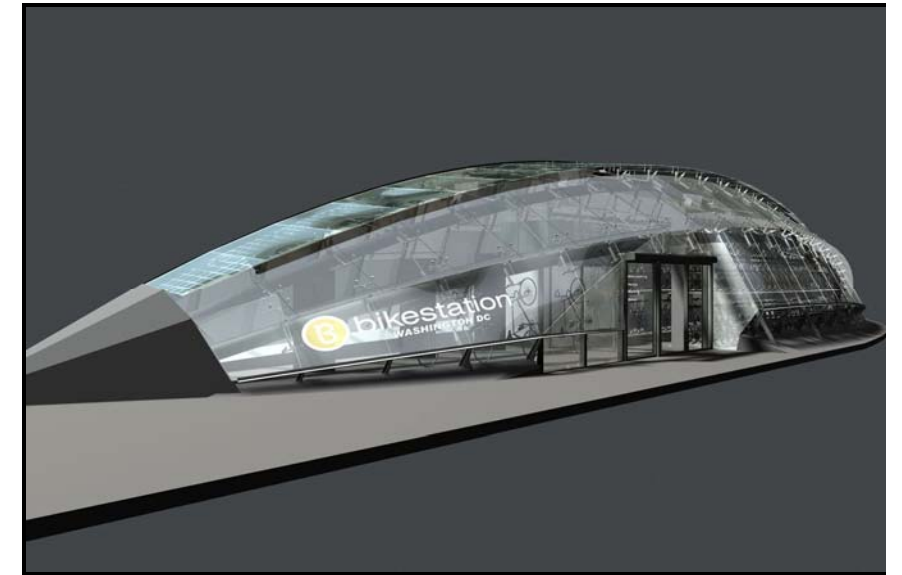


Figure 2-9. Conceptual Design of Proposed Bicycle Facility at Union Station

2.4 TRANSPORTATION SERVICES AT UNION STATION

Transit service at Union Station includes Metrobus, Metrorail and the more recently introduced Downtown Circulator service. Transit ridership in the region continues to grow for both rail service and surface transit. These growth pressures are being felt and will continue to be felt at Union Station. Metrorail capacity constraints through the District's downtown core are focusing transit expansion more on surface transit, including expanded bus service, circulators, and light rail trolley service. This section focuses on existing transit operations while Chapter 3 includes a discussion on service expansions, such as the H Street streetcar and the K Street Transitway, that need to be considered in the planning and feasibility analysis for Union Station.

Both Metrobus and Metrorail are operated by the Washington Metropolitan Area Transit Authority, an organization that was created in 1967 to plan, develop, build, finance, and operate the region's transit system. Metrobus is the nation's fifth largest bus system, while Metrorail is the nation's second largest rail transit system. Metrorail and Metrobus serve a population of 3.5 million in a 1,500 square mile service area. Forty-two percent of those who work in the region's central core of the District (and parts of Arlington) use Metrobus and/or Metrorail to get to and from work.

2.4.1 Metrobus

2.4.1.1 Facilities

Metrobus serves Union Station directly, with a major bus stop and layover space on Columbus Plaza. Other highly utilized facilities in the study area include Columbus Circle and North Capitol Street, the latter seeing the highest Metrobus traffic in the area.

2.4.1.2 Ridership

Close to 300 miles of roadway in the District is served by the 58 major District Metrobus lines. Regionally, the system carries over 460,000 bus trips on an average weekday and, historically, about 55 percent of those trips are made within the District. The Union Station study area is served by nine separate WMATA bus routes. All of the routes operate within the District's city limits. Most of the routes operate throughout the day with increases in service during peak hours. The highest ridership in the study area occurs primarily on the busiest streets: Massachusetts Avenue, North Capitol Street and H Street. Metrobus operations are illustrated in Figure 2-2.

The four highest volume bus stops in the study area are:

- North Capitol Street & H Street
- Columbus Circle/Massachusetts Avenue & 1st Street NE
- Columbus Plaza (near the SW corner of Union Station)
- North Capitol Street & Massachusetts Avenue.

Figure 2-10 shows the ridership at the aforementioned stops, in addition to other stops with significant ridership. The information in the figure was obtained by WMATA in 2003 and is broken down by their designated peak and off peak periods. The highest ridership occurs at North Capitol and H Street, due primarily to the X2 bus route which runs along H Street and accounts for nearly two-thirds of the ridership at the N. Capitol and H Street intersection. While the X2 only runs along H Street in the study area, the majority of the buses that service both H Street and Union Station have higher ridership near the station, highlighting Union Station's current role as a transit hub. While the number of transfers from bus to other modes was not collected for this study, observations showed that at least half of bus alightings at the Columbus Plaza bus stop moved toward or came from Union Station. The high bus ridership throughout the study area, including stops that are a few blocks removed from Union Station, shows that accessibility to other forms of transportation and access to employment centers are both effective at attracting people to this area. The popularity

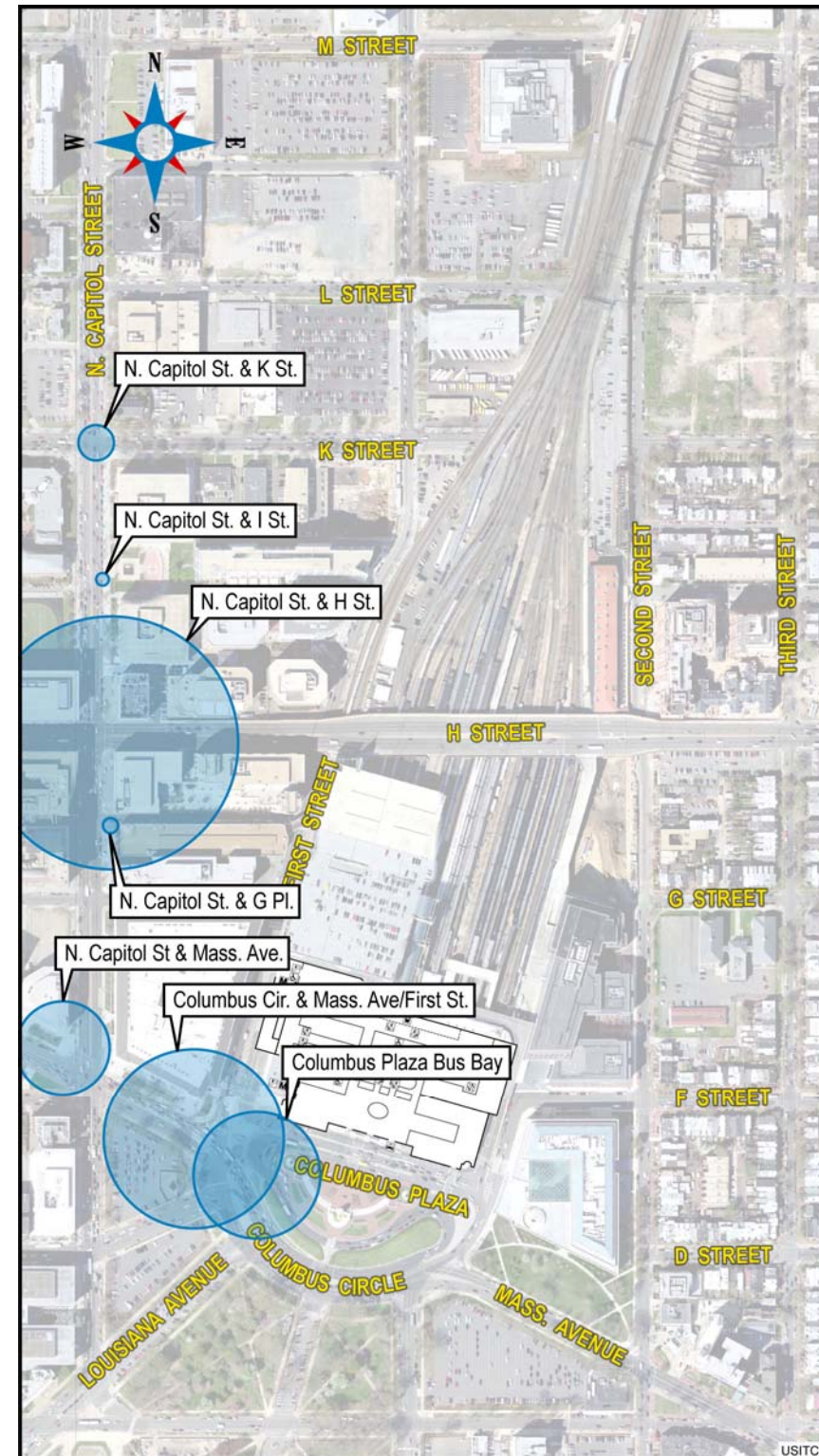


Figure 2-10. Relative Number of Boardings and Alightings at Metrobus Stops

of the Union Station study area for bus passengers is exemplified by the significant portion of the ridership on these lines occurring within the study limits. The D4 line is a particularly strong example of this, as over 40% of those who board this route do so within the study area. Details on ridership by route is included in Appendix A, Tables A-5 through A-8.

2.4.1.3 Operations

The Metrobuses near Union Station operate with frequent service throughout the day, with significant increases during peak commuting times. Bus operations ramp up during the morning period from 6 AM to 10 AM and during the evening period from 3 PM to 7 PM. The number of buses per hour scheduled to pass by the busiest stops is illustrated in Figure 2-10. The three intersections listed have comparable rates of bus traffic throughout the day, while Columbus Plaza has lighter traffic. However, it should be noted that since Columbus Plaza acts as both a terminus and origin for bus routes, the routes are only counted once there, while at other stops, the two directions are counted separately.

Since Columbus Plaza is separated from the rest of the traffic stream, buses there have an opportunity to pull over and dwell, which is the case of most of the routes that utilize this station. The westernmost portion of Columbus Plaza is reserved for MetroBuses. The westbound routes of the D4 and X8 bus and the southbound route of the D8 bus terminate at Columbus Plaza, while the accompanying eastbound and northbound routes originate there. At other times, buses dwell if they are ahead of schedule. The D4 and X8 buses have an average 4 to 5 minutes of time in between the end the westbound portion and beginning of the eastbound portion of their routes; the D8 bus has an average of about 7 minutes scheduled in between its routes. Field observations of Metrobuses in Columbus Plaza confirmed dwell times of 4 to 20 minutes, with the longer dwell times likely to be those of buses going into or out of service at Union Station.

2.4.1.4 Population

Since the service frequency of Metrobus responds to increases in demand during peak periods, a considerable number of buses are taken out of service between the morning and afternoon peaks. The morning peak operations in their current state require 591 buses of Metro's fleet, while the afternoon peak requires 571. However, during the midday, the number of buses required to run Metro's routes dips to 275, representing a gap

of over 300 buses that are taken out of or put back in to service throughout the system between peak periods.

2.4.2 DC Circulator

The Circulator bus system, like the other bus systems in the area, is designed to efficiently move people in and around the District. However, the Circulator's sole function is to move people within the core of the city. All three of the Circulator routes are downtown, one of which loops around the National Mall. The route servicing Union Station runs between the station and Georgetown. The Circulator system is relatively new, and as such, the buses are bold, modern, and very distinct from WMATA buses. Depending on the route and time of day, however, Circulator buses can cater to a similar market of DC resident transit commuters, using the system as an extension of Metro and the Metrobus network.

2.4.2.1 Facilities

Outside of Union Station, the Circulator operates much like a Metrobus, utilizing Metrobus stops to load and unload passengers. At Union Station, however, the Circulator uses the east and west access roads to layover in the Union Station Garage, where two bays are reserved for the Circulator. While this brings Circulator service within Union Station, most passengers choose to use stops along Massachusetts Avenue to board and alight from the bus.

2.4.2.2 Ridership

The Union Station to Georgetown line is the most heavily used of the three Circulator Routes. Ridership for the line in April of 2008 was over 155,000 trips, or about 74% of all the monthly Circulator ridership. April's ridership represents a 22% increase over the same month in 2007. Ridership at specific locations was not available, though there are distinct increases in ridership at the two ends of the route. Average weekday ridership for the Union Station to Georgetown line was approximately 6,200 riders per day during the month of April.

2.4.2.3 Operations

Though the Circulator bus caters to both tourists and District residents alike, its operations near Union Station are heavily commuter in nature as a result of the fact that it serves a heavily trafficked corridor between Georgetown and Union Station. Service to Union Station runs from 7 AM to 9PM during the week, with a scheduled headway of 10 minutes throughout the day. While frequency of operation does not change, ridership on the Circulator makes a

marked increase during peak periods, in particular from 7 to 8 AM and from 4 to 5 PM. **Figure 2-11** below shows the cumulative ridership by hour for the month of April, highlighting the distinct commuting peaks, as well as the significant portion of system ridership that is attributable to the Union Station to Georgetown route.

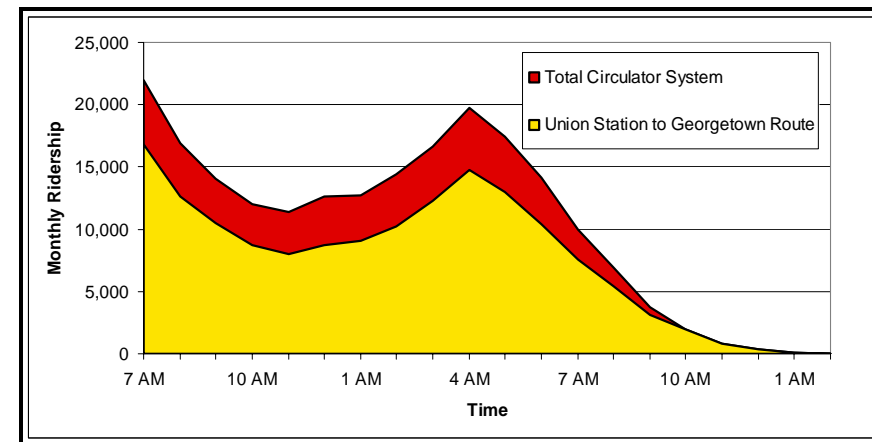


Figure 2-11. Circulator Monthly Ridership by Time of Day (April 2008)

2.4.3 Commuter Buses

Commuter buses, while represented in substantially smaller numbers than Metrobuses, also have a role in moving passengers to and from Union Station. Commuter buses are operationally different than inter-city buses such as Greyhound, although they sometimes serve the same locations, using similar vehicles. For this study, six commuter bus operations were found and analyzed that service the District. The six operations are:

- Maryland Transit Administration (MTA Maryland) commuter buses
- Potomac and Rappahannock Transportation Commission (PRTC) OmniRide
- Loudoun County (LC) commuter buses
- Martz Group commuter services
- Quick's Bus Company commuter bus service
- Shenandoah Valley commuter bus service - Valley Connector (VC)

Commuter buses cater to a market segment than local city buses or intercity buses, bringing in commuters from various suburbs surrounding the District over longer distances, with buses that are optimized for infrequent boardings and deboardings. MTA Maryland, PRTC (OmniRide) and Loudoun County provide the bulk of the commuter bus service to the District. The VC commuter service, which only operates a single bus run into

Washington, has the furthest route, beginning in Woodstock, Virginia, approximately 100 miles away from downtown Washington. The other Virginia based companies operate out of the Fredericksburg area (Quick's and Martz), about 50 miles outside of the District, Purcellville (LC), also about 50 miles away, and Manassas and Gainesville (PRTC).

2.4.3.1 Facilities

Union Station has no facilities dedicated exclusively to commuter bus service. MTA Maryland, the Maryland Mass Transit Administration of the Maryland Department of Transportation, operates the most commuter buses servicing Union Station study area, with bus stops on N. Capitol and H streets. Loudoun County Transit, the second busiest operator, serves H Street and N. Capitol Avenue, as well.

At mid-day, when commuter buses are not bringing people into or out of the city, they must be "staged," or stored before they make a return trip in the evening. The midday layover procedure varies by agency. As an example, the Loudoun County commuter buses return their entire fleet to a "home base" during the midday. Other agencies will return some buses, and have others remain in the city, staging at the various bus lots or street parking. Alternatively, others may leave the buses at a staging yard in the District, but shuttle groups of drivers back during the layover period.

2.4.3.2 Ridership

Detailed ridership of the commuter bus was not available specifically at Union Station. However, broad level estimates showed that the average commuter bus servicing Union Station is half to three-quarters full on any given day of the week. **Table 2-2** below shows the ridership for the bus routes servicing Union Station. Note that the table does NOT reflect ridership specifically at Union Station.

Table 2-2. Ridership¹ of Commuter Buses which Serve Union Station Area

	MTA MARYLAND ²	PRTC	LC ³
Average Daily Ridership for Route Servicing Union Station	2,153	—	1,865
Resulting Average Bus Occupancy Servicing Union Station	36	—	43

¹ Of those systems that ridership data could be obtained

² Average daily ridership for FY2008, up to April 2008 for 903, 922 and 950 routes obtained from phone conversation with Glen Hoge of MdTA, 5/8/08

³ Ridership for bus routes servicing Union Station area, May '08, from <http://www.loudoun.gov/Default.aspx?tabid=969>

2.4.3.3 Operations

Commuter buses provide a constant stream of bus traffic into the city, predictable by time of day and uninfluenced by season. Conventional peak traffic periods see the vast majority of commuter bus volumes, while midday sees activity taper off. The majority of the commuter buses will end their trips by 9 to 10 AM for morning service into Washington. In the afternoon, the majority of them begin service around 3 PM, though there are often mid-day day departures out of the city, especially on Fridays. The number of bus runs that commuter bus agencies provide Include:

- MTA: 60 buses in the study area, 321 throughout DC
- PRTC: 2 buses in the study area, 138 throughout DC
- LC: 43 buses in the study area, 59 throughout DC
- Martz: 0 buses in the study area, 23 throughout DC
- Quick's: 2 buses in the study area, 6 throughout DC
- VC: 1 buses in the study area, 2 throughout DC

While the numbers shown above do not represent the number of actual buses, since most are used for multiple runs during any given period, they do highlight the fact that there are many buses that layover during the day, either in the city or elsewhere.

Despite Union Station's proximity to major job attractors such as Capitol Hill, only some of the commuter buses serving Washington actually pass through the study area. The MdTA and LC commuter buses both provide significant service to the station, but LC is the only agency to schedule a bus stop within the study limits for a majority of its bus routes. The other agencies have limited if any service near Union Station, and instead focus primarily on areas deeper downtown to the west such as the State Department. Of the buses that do pass within the study areas, service operates similar to any other bus route, with passenger pick up and drop offs at designated locations. Before buses begin their routes in the evening, they can often be seen idling on the 11th Street (Hopscotch) Bridge, waiting to move into position to begin their routes on schedule.

2.4.4 Metrorail

Union Station plays a large role in Metrorail's operations. While only utilized by the Red Line, Union Station maintains the distinction of being the highest volume station in the system. Even without other Metrorail lines to transfer to, much of the ridership at Union Station is still transfer traffic – specifically transfers from commuter trains. Access to neighborhoods and em-

ployers also drive the ridership at the station. Union Station's role as a transfer point and intermodal hub rely heavily on the Metrorail that runs beneath it.

2.4.4.1 Facilities

The Union Station Metro Station is located below Union Station's lower level, along the west side of the building next to 1st Street. It has three connections to Union Station:

- An outdoors entrance in the southwest corner of Union Station, with escalators from street level leading to the Metro station mezzanine level.
- An entrance from Union Station's lower level, connecting to the same mezzanine level as the entrance above.
- An entrance at the northwest corner of Union Station's main level.

As illustrated in Figure 2-7, the entrance at the northwest corner experiences heavy congestion, as it also serves as a main entrance out of Union Station for many MARC, VRE, Amtrak, and other Union Station users on their way to offices to the north and west. This entrance is very constricted, poorly marked, and heavily utilized, particularly during rush hours, by commuters transferring from Metrorail to commuter rail or vice-versa.

2.4.4.2 Ridership

During a typical weekday, the Union Station Metrorail station is the busiest station in the system. Approximately 34,000 trips on the Metrorail system originate at Union Station every day, which represents about 5% of the approximately 710,000 daily trips on the Metrorail system (as of the time survey information was collected in late spring of 2007). As can be seen in **Table 2-3**, over two-thirds of the ridership from Union Station occurs during the peak periods, with ridership slightly higher in the evening period as compared to the morning. This consistently high ridership is in contrast to most other Metrorail stations that act as primarily a morning origin (those near residential areas, such as Shady Grove) or evening origin station (those near employment centers downtown, such as Metro Center). As can be expected from consistently high boardings, the volume of alightings at Union Station is also high – the most of any station on the entire Metrorail system throughout the day.

Table 2-3. Volumes of Weekday Metrorail Trips Beginning or Ending at Union Station

	METRORAIL TRIPS ORIGINATING AT UNION STATION		METRORAIL TRIPS FINALIZING AT UNION STATION	
AM Peak (opening to 9:29 a.m.)	10,005	30%	12,395	37%
AM Offpeak (9:30 a.m. to 2:59 p.m.)	6,428	19%	7,061	21%
PM Peak (3:00 p.m. to 6:59 p.m.)	12,912	38%	11,700	35%
PM Offpeak (7:00 p.m. to 12:00 a.m.)	4,521	13%	2,407	7%
Total Peak	22,917	68%	24,095	72%
Total Offpeak	10,949	32%	9,468	28%
Total	33,866	100%	33,563	100%

Source: WMATA, 2007 Metrorail Passenger Survey

While direct hourly ridership was not obtained for the Metrorail system, it has been estimated based on peak period ridership train frequency. The estimates indicate that during the morning and peak hours, at least 3,350 and 3,850 people per hour, respectively, board a Metro train at Union Station. Likewise, at least 4,150 people alight from a Metro train in the morning peak hour, and at least 3,500 in the evening peak hour. Due to the surges that occur within these peak hours, these figures underestimate the highest peak volumes for short periods of time.

2.4.4.3 Operations

Union Station is one of several downtown stops on the Red Line, though by nature of the fixed route, has the same train frequency as all other downtown stops. From Union Station, the Red Line towards the Shady Grove terminus extends west and northwest, going through downtown Washington, neighborhoods of northwest Washington, and then out as far as Gaithersburg, Maryland; in the direction of the Glenmont, the Red Line services neighborhoods in Northeast Washington, and through Maryland to Glenmont, Maryland. During the peak periods, (roughly 7 AM to 10 AM and 4PM to 7PM) up to 25 trains in either direction arrive per hour. This is two and a half times as frequent as during regular mid-day service, which has twenty trains per hour, split evenly between the two directions. Headways in each direction through Union Station are consequently as short as two to three minutes during peak hours, six

minutes during the midday, and up to 17 minutes during weekday evening post-peak service.

2.4.5 Intercity Bus

Intercity bus service to and from the study area is provided by Greyhound and Peter Pan Bus lines, which operate from a facility north of the main Union Station Complex. Although intercity bus ridership to the Washington DC area is increasing, benefits from the increase may be limited for Union Station, due to the remote location of the bus depot. New bus services that are being developed to serve the Northeast corridor, such as Mega-Bus, operated by First Group, Bolt Bus operated by Greyhound, and the various coaches serving the Gallery Place Chinatown neighborhood are increasingly choosing to provide service from various curbside stops throughout the Washington DC area. Few of these curbside stops are near Union Station due to congestion on the surface streets around the station; operators instead choose locations throughout the district convenient to Metrorail or other regional transit points.

2.4.5.1 Ridership

Daily Greyhound Lines ridership at Washington DC is estimated at around 3,500 passengers.

2.4.5.2 Facilities & Operations

The Greyhound bus depot, located at 1st Street NE and L Street, is in the project area and its operations are being evaluated as an integral component of the study. Buses arrive 24 hours a day, with headways of approximately 30 minutes. Though service drops off during nighttime hours, the depot handles over 60 buses per day.

A key issue with the current configuration of facilities is the distance between Union Station facilities and the Greyhound facilities, which are separated by more than 2000 feet, or .38 miles, despite serving passengers with many of the same characteristics and needs as Amtrak passengers.

2.5 RAIL AT UNION STATION

The primary and historical transportation function of Union Station is as a rail terminal. Twenty tracks serve the station, carrying both commuter and intercity rail traffic. Seven tracks continue through the station, carrying traffic southward to Virginia and other points south. Union Station is the terminus of

two of Amtraks most popular services, Acela Express and the Northeast Regional, as well as five commuter rail lines.

Rail services at Union Station use common passenger facilities along the north edge of the building that were built as part of the development activities associated with the 1981 Redevelopment Act.

2.5.1 Commuter Rail

By their nature, commuter trains, like commuter buses, operate with distinct work-based peak periods; bringing people into the District in the morning, and taking them back home in the evening.

Commuter rail service at Union Station is provided by two separate services:

- Maryland Transit Administration’s Maryland Rail Commuter (MARC)
- Virginia Railway Express (VRE)

MARC trains operate on three lines, extending to Perryville, Maryland, Martinsburg, West Virginia and Baltimore, Maryland with Union Station being the terminus and only District station. VRE operates two separate lines, running from Manassas and Fredericksburg, Virginia, with service in the District at L’Enfant Plaza and Union Station.

2.5.1.1 Facilities

Commuter rail at Union station operates alongside Amtrak service. MARC trains, which serve both high and low level platforms, operate from the westernmost tracks, often interspersed with Amtrak Intercity trains.

VRE trains operate from the easternmost tracks, which are low-platform tracks to accommodate VRE’s low-platform train sets. VRE shares these tracks with the 18 daily Amtrak trains that provide through service to Richmond, Virginia, the Carolinas, and Florida.

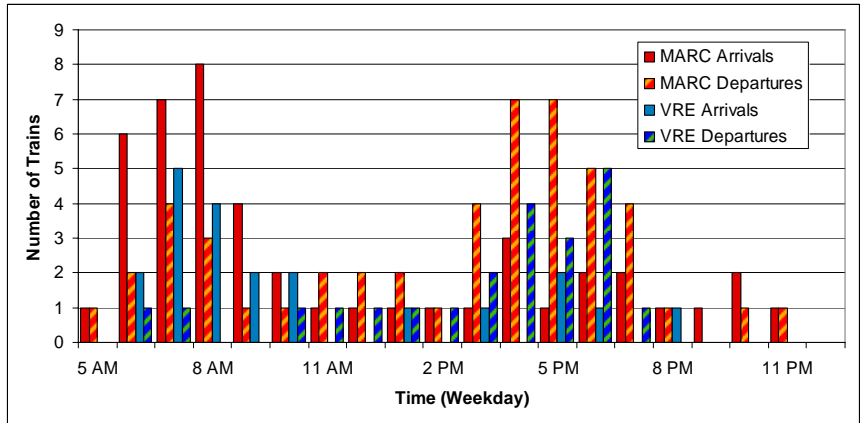
2.5.1.2 Ridership

Commuter rail operations at Union Station are some of the busiest in the county. Over 30,500 riders use the MARC system on an average weekday, while over 15,000 riders use the VRE system on an average weekday. Detailed ridership data for the commuter rail systems is shown in Appendix A, Tables A-9 and A-10.

2.5.1.3 Operations

The inbound/outbound patterns of commuter trains are similar to those of the commuter buses. **Figure 2-12** displays the frequency of service of the commuter rail operations at Union Station. The high frequency of arrivals in the morning, up to eight trains in an hour for the MARC system, coupled with the high volume of departures in the evening is dictated by a traditional work day. VRE maintains a distinct peak hour, having over 40% of the morning arrivals occurring within a single hour. Evening departures are more evenly distributed. However, the presence of trains throughout the day shows some deviation from the pure inbound/outbound daily commute. In particular, there are several morning trains which depart bound for Baltimore, another large employment attractor.

As discussed in Section 2.2.2, the arrival of the commuter trains creates a large platoon of passengers leaving the train to transfer to other modes of transportation or simply depart the station. A single train often creates a platoon of over 200 people moving through Union Station, beginning in the rear of the station where passengers exit the rail concourse, through to the Metrorail platform, or out the doors to the adjacent streets. Observations showed that essentially all the passengers depart from the commuter train within approximately five minutes, with the majority of people leaving the platforms in less than three minutes.



Source: MARC and VRE published train schedules
Figure 2-12. Commuter Train Activity at Union Station

2.5.2 Intercity Rail

Long distance rail service from Union Station is provided by Amtrak. The majority of Amtrak’s trains using Union Station are part of the Northeast Corridor rail service which goes north to

Philadelphia, New York City and Boston. Schedules are focused primarily on the densely populated east coast, however, a limited number of options are available for traveling as far south as Miami, Florida, and as far west as Seattle, Washington and San Francisco, California. Additionally, some of Amtrak's operations accommodate suburban Washington region workday commuters by allowing VRE & MARC fares to be accepted on select trains with payment of a small step-up fare.

Approximately 50 trains both arrive and depart each day at Union Station with the volumes illustrated in **Figure 2-13**. Amtrak service at Union Station is more evenly distributed than the distinct morning and evening peaks of commuter rail. Between 8 AM and 8 PM, 40 trains arrive and 39 depart, which is over two-thirds of the 116 Amtrak trains using Union Station throughout a given weekday. A peak occurs between 10 to 11 AM, and again at 7 to 8 PM, with a combined 11 trains arriving or departing during each of these hours.

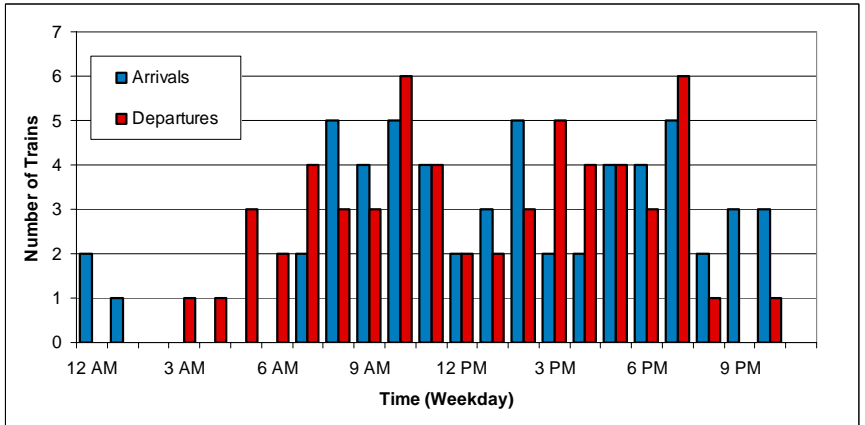


Figure 2-13. Amtrak Activity at Union Station

2.6 TOUR BUSES

Tour buses are a common sight around the District, shuttling tourists across the city to experience the history and culture of the nation's capital. The sheer volume of buses, combined with their large profile, makes them highly visible. Observations

have shown that tour bus populations peak during the spring months which includes the popular Cherry Blossom Festival.

2.6.1 Facilities

A key component of the 1981 Redevelopment Act activities was the inclusion of 95 spaces for tour buses on the garage's first level. Tour buses can access this level from H Street, or the west or east access roads.

2.6.2 Ridership

A survey of bus populations was conducted on the afternoon of Thursday May 15, 2008 in order to get a "snapshot" of the number of buses in the District at any one time. Traveling around the city, buses were counted whether parked or driving, with attempts made to avoid double-counting moving buses. A number of commuter buses are included in these figures, partially due to the inability to distinguish commuter buses from smaller tour bus liveries. It was concluded, however, that even though commuter buses may have longer layover periods, and consequently different parking requirements than tour buses, the presence of commuter buses at any parking location increases the overall parking demand.

2.6.3 Operations

Although some tour buses begin and end service at Union Station (GrayLines operates a ticket booth on the bus level of the Union Station Parking Garage), most buses use Union Station as a way point allowing tourists to eat and shop at Union Station.

As shown in **Table 2-4**, the majority of tour buses are focused on the National Mall itself, as well as at locations with quick access to the Mall area. Street parking is available for buses along Maine Avenue and Water Street, as well as Ohio Drive and the Hain's Point area. These "first come-first serve" areas seem to be popular destinations for empty tour buses laying over while the passengers explore the museums and monuments down-

town. These streets provide not only free parking for a certain period of time, but also relatively easy access to the major tourist destinations. Other locations which have been designated as bus layover locations are less popular. The Anacostia bus staging lot, for example, had only eleven buses, while an additional two were counted parked on an adjacent street. Most of these appeared to be commuter buses waiting for the afternoon outbound shifts. The expansive lots outside of RFK Stadium were effectively empty, only buses parked on streets adjacent to the lots were seen in this area. Likewise, no buses were seen in the parking lot of the old Convention Center in downtown, but instead a small number of buses were seen on the adjacent roads surrounding the parking lot. A survey of actual bus operators, to take place later in the study, may reveal more definitively the operations of these buses and their parking characteristics and needs.

Table 2-4. Combined Tour and Commuter Bus Populations Observed Near Downtown Washington

LOCATION	TOUR OR COMMUTER BUSES	TOURING SCHOOL BUSES
Hain's Point, Ohio Drive	83	30
Streets Adjacent to RFK Stadium Parking Lots	2	2
Anacostia Bus Parking Lot	13	0
Maine Avenue, Water Street	83	0
National Mall and Nearby Street Network	256	32
Near Old Convention Center Parking Lot	9	0
Union Station Parking Garage	55	0
Total	501	64

Source: Parsons Transportation Group field data collection May 15, 2008

3 – PLANNED AND PROPOSED TRANSPORTATION COMPONENTS

As this report has described, Union Station serves a wide variety of travel modes and functions as a major transportation and activity hub in the District of Columbia. The success of Union Station, as evidenced by the 32 million patrons who make use of the facility every year, comes from its central location, the range of work, residential, and entertainment/shopping activities within the station and nearby, and its function as an intermodal hub that allows for transfer between the various modes that serve the station. While the current intermodal function of the station reflects some level of planning, a truly comprehensive and integrated look at how the modes interact and how those interactions could feasibly be improved is needed. This study seeks to address that need.

One of the key elements of this study is to consider the continued growth in demand for various services, current expansion needs and plans, and potential conflicts and/or constraints related to the implementation of these expansion plans. Overriding the assessment of these various plans, however, is the goal of better integrating the various modes and making the interactions between the modes as seamless and convenient as possible. To take one example: there are discussions relative to moving the existing intercity Greyhound bus station into Union Station itself. The goal of better integrating intercity bus into the intermodal mix at Union Station presents an opportunity to provide better connections for travelers, but issues relative to appropriate location and connections need to be fully identified and then addressed.

Projects planned and proposed for the Union Station study area are shown in **Figure 3-1**.

This chapter summarizes some of the current needs, plans, and potential challenges for the various modes at Union Station. It is important to note that this list will continue to be developed and updated as this study progresses.

3.1 VEHICULAR CONNECTION BETWEEN MASSACHUSETTS AVENUE AND H STREET NE

Based on annual average weekday traffic counts reported by DDOT, Massachusetts Avenue (23,000 vehicles per day) and H Street, NE (27,000 vehicles per day) are the two busiest streets

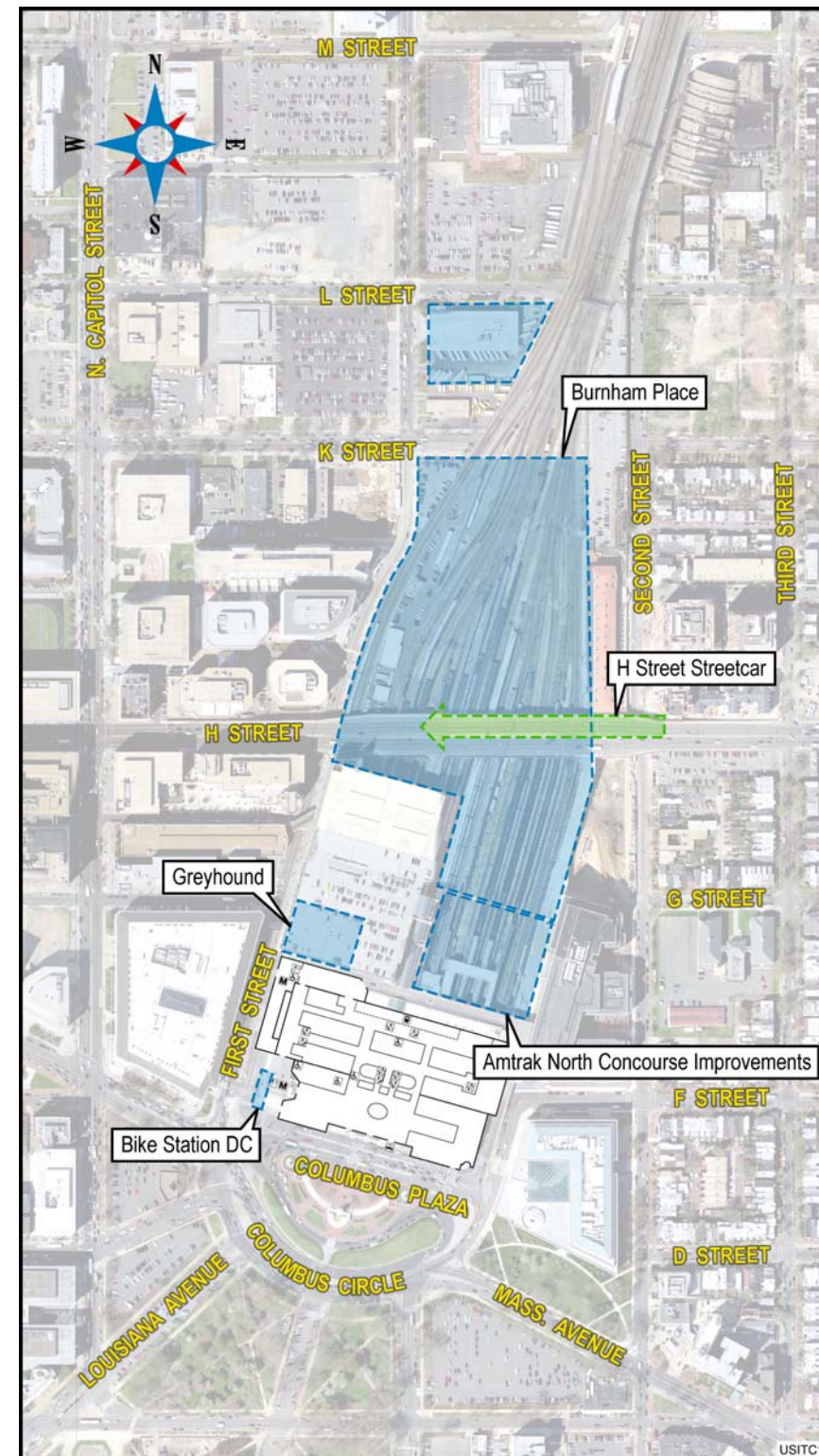


Figure 3-1. Future Development Activity near Union Station

in this study vicinity. The two roads intersect at a point about one half mile west of Union Station. To the east of the Massachusetts Avenue and H Street intersection, 2nd Street, NW, New Jersey Avenue and North Capitol Street provide connectivity to both roadways. Apart from these three streets, connectivity would otherwise be made via small residential streets. Based on existing physical space and other constraints, the most opportune location for a new connection would be east of Union Station, but west of 2nd Street, NE since only residential streets and neighborhoods exist further to the east. On the other hand, to the west of the station, 1st Street NE cannot be used since it is not connected at grade to H Street.

The connection can begin with the existing northbound portion of Columbus Circle at Massachusetts Avenue and tie into H Street as another leg to the intersection of H Street and the access ramp that services the Senate Place development. This will create a more complicated intersection, but will waive the necessity of adding an additional signal on the H Street Bridge. Alternatively, the alignment can be brought closer to and parallel to the Union Station parking garage, and then brought into H Street at the same location as the driveway to the parking garage, though this will necessitate adding a traffic signal at this location.

3.2 INTEGRATION OF INTER-CITY BUS SERVICE INTO THE UNION STATION GARAGE

The Greyhound bus depot on L Street, NE utilizes 15 bus bays to cater to the 64 buses per day at the depot. Given these existing operations, an area of approximately 11,100 square feet would be required at the Union Station parking garage to accommodate these bus slips. In addition, employee parking, circulation, passenger pick-up and drop-off areas, concourses, and other outdoor station features add up to 40,000 additional square feet. Internally, areas for ticketing, passenger waiting, driver and employee accommodations, baggage etc are needed, adding another 11,000 square feet. The administrative and bus services (such as repair equipment) may add another 2,000 square feet.

While the parking garage behind Union Station may be a logical place to relocate of Greyhound services, this will require reduc-

ing or perhaps removing the tour bus parking currently available. The tour bus parking is a valuable asset to both Union Station and the District as it brings business to Union Station, and provides support to the tour bus industry which is incredibly important to Washington's businesses. A complete relocation of the tour bus parking therefore is a less than ideal option. Borrowing space from development above the rail yard behind Union Station may prove to be necessary to integrate commercial bus service. Adjusting Greyhound bus layover schedules so that fewer buses are loading or unloading at any given time may reduce the space needed closest to the station. Administrative space may be placed somewhere within Union Station, perhaps placing Greyhound ticketing alongside the current Amtrak ticket counters or using a retail store location. Alternatively, passenger car parking spaces in the parking garage could be sacrificed to create an external, but immediately adjacent facility which could also be large enough to accommodate waiting areas for passengers. Since inclusion of inter-city bus would be such a logical component of an ITC, the coordination necessary to integrate Greyhound would be worthwhile.

3.3 INTEGRATING STREETCAR SERVICE FROM H STREET

The rehabilitation of the H Street NE corridor includes plan for a streetcar running from Benning Road to 2nd Street NE along H Street. The as yet to be planned terminus could very well fit

into a plan at Union Station. The current alignment calls for two sets of tracks, one on each side of H Street in the curb lanes.

One potential option for bringing the streetcar service up to Union Station would call for bringing the streetcar below grade, connecting with an existing tunnel lying below the rail yard behind Union Station. A pedestrian connection can then be made from this tunnel platform to Union Station, most likely continuing an existing tunnel that extends from the Metrorail station nearly to the tunnel below H Street. If the streetcar is extended at-grade to 2nd Street, it will then have to drop in elevation to reach the existing H Street tunnel, which would require a grade of at least 3% in the approximately 650 foot horizontal distance.

Another option brings the streetcar up the H Street Bridge over the rail yard behind Union Station. This plan will necessitate integration with a deck planned above the rail yard that is part of the proposed Burnham Place development. WMATA has a vertical access easement from street level to the H Street Bridge which may be of use for accessing the streetcar terminus on the bridge. Additionally, running the streetcar on the bridge may help facilitate route extensions to the west.

3.4 OTHER MODES NEEDS

Amtrak: Amtrak projects continued growth in passenger demand, potentially requiring extensions to existing platforms.

There are some physical constraints to such expansion, and alternative methods to provide expanded capacity will need to be developed and assessed.

VRE/MARC: In 2004, VRE issued a long range strategic plan that outlined their goals through 2025. Included was an option for providing run-through service at Union Station, allowing access to MARC stations for VRE trains and vice-versa. Vertical and horizontal passenger movement areas would likely need to be improved to facilitate the additional passenger volume expected as part of this service, in particular due to the need to move some MARC trains to the lower level tracks which are furthest from Metrorail. Coordination between VRE, MARC, WMATA and Union Station will be paramount to make this option feasible.

3.5 PROPOSED DEVELOPMENTS AFFECTING UNION STATION

Burnham Place is a three million square-foot development planned in the air rights above the Union Station Tracks. A key component of both the North of Market (NOMA) Neighborhood Plan and the H Street Redevelopment, Burnham place would connect Union Station, H Street, and NOMA through a complex of office space, commercial, hotel and residential place. As such, identification of key transportation issues in the corridor is critical to both Burnham Place and Union Station.

4 – SUMMARY

As described in the introduction, this Baseline Study Report, the first of several being developed for the study, describes existing uses, operations, and conditions for the various travel modes at Union Station. As such, the objective of this report was to catalog those conditions and use to inform further study of the Intermodal Transportation Center.

Key findings from this Baseline Study Report include:

1. Traffic. The streets immediately around Union Station see a high volume of traffic, and generally function at LOS D or worse. Key streets and AADTs are:
 - Massachusetts Avenue: 23,000 vehicles per day
 - H Street: 27,000 vehicles per day
2. Bus Accommodations in the Union Station Parking Garage. Intercity bus service from operators such as Greyhound and Peter Pan Lines is currently operated from a

facility physically separated from Union Station. Integration of inter-city bus service into any future development at Union Station would be highly desirable by both the operators and travelers, but may be difficult to accommodate. Ample provision for tour buses exists in the current garage configuration, but may not be adequate for the addition of Greyhound Intercity Bus service.

3. Pedestrian flows into and out of Union Station. Pedestrian flows in Union Station are highly dependent on the configuration of services using the tracks. Chokepoints exist in the existing station that would need to be accommodated any additional development. Chokepoints are especially pronounced around the Metrorail Station, the busiest station in the 104 mile system.

Chokepoints exist outside the station as well, especially near the southeast corner of the building, and the busy 1st street exit.

4. Grown Projections: Ridership on all modes using Union Station directly – Metrorail, MARC, VRE, and Amtrak is increasing, and is expected to grow, making existing facilities in Union Station increasingly inadequate.

Developments in the surrounding areas of NOMA and H street will provide new traffic, transit service, and residents, and must be able to be accommodated.

Next steps for the study will include development of a set of recommendations to address growth at Union Station in both the short and longer terms.

APPENDIX – INVENTORY AND TRAVEL DEMAND TABLES

A-1. Field Collected Turning Movements

		AM PEAK PERIOD				PM PEAK PERIOD			
		L	T	R	SUM	L	T	R	SUM
N. Capitol St. and K St.	Southbound(SB)	4	1114	286	1404	14	702	168	884
	Westbound(WB)	142	494	94	730	202	360	60	622
	Northbound(NB)	50	580	108	738	2	1040	50	1092
	Eastbound(EB)	120	238	64	422	218	466	56	740
1st St. and K St., NE	SB	16	216	150	382	62	210	148	420
	WB	164	512	80	756	48	166	56	270
	NB	12	46	30	88	22	132	120	274
	EB	40	120	88	248	78	532	60	670
2nd St. and K St., NE	WB	34	724	2	760	18	230	0	248
	NB	180	4	38	222	122	0	68	190
	EB	0	156	18	174	0	778	28	806
3rd St. and K St., NE	SB	16	190	54	260	24	130	22	176
	WB	56	652	64	772	30	168	14	212
	NB	58	114	2	174	42	128	38	208
	EB	22	174	24	220	32	596	36	664
N. Capitol St. and H St.	SB	22	914	354	1290	106	600	290	996
	WB	68	1448	156	1672	80	618	142	840
	NB	34	504	110	648	0	732	140	872
	EB	152	428	76	656	114	852	56	1022
H St. and Union Station Garage NW Entrance	WB	48	1378	0	1426	8	590	0	598
	NB	8	0	4	12	210	0	96	306
	EB	0	460	56	516	0	1228	18	1246
H St. and Union Station Dock NE Entrance	WB	40	1520	0	1560	6	582	0	588
	NB	8	0	4	12	22	0	22	44
	EB	0	386	42	428	0	1312	4	1316
3rd St. and H St., NE	SB	14	88	50	152	52	130	44	226
	WB	42	1216	42	1300	18	532	16	566
	NB	98	108	36	242	46	184	48	278
	EB	26	334	24	384	114	1342	82	1538
N. Capitol St. and G St.	SB	18	794	40	852	22	612	14	648
	WB	46	36	24	106	88	94	46	228
	NB	16	582	168	766	4	898	68	970
1st St. and G St., NE	SB	0	102	96	198	0	176	130	306
	NB	0	6	2	8	0	12	4	16
	EB	78	0	44	122	56	0	52	108

		AM PEAK PERIOD				PM PEAK PERIOD			
		L	T	R	SUM	L	T	R	SUM
2nd St. and G St., NE	SB	0	58	0	58	0	74	0	74
	WB	58	0	86	144	26	0	22	48
	NB	0	120	0	120	0	182	0	182
3rd St. and G St., NE	SB	0	98	36	134	0	136	22	158
	WB	38	88	74	202	12	26	58	96
	NB	32	108	0	140	16	152	2	170
N. Capitol St., Mass Ave. and F St.	SB	234	580	122	936	182	548	90	820
	WB	14	828	288	1130	14	364	186	564
	NB	0	410	8	418	0	624	10	634
	EB	224	348	32	604	296	502	50	848
N. Capitol St. and F St.	EB	0	410	8	418	0	624	10	634
2nd St. and F St., NE	SB	24	98	0	122	22	94	0	116
	WB	130	14	20	164	40	0	16	56
	NB	0	88	38	126	0	124	62	186
	EB	18	36	60	114	54	34	100	188
3rd St. and F St., NE	SB	16	84	28	128	48	84	22	154
	WB	22	134	38	194	6	40	14	60
	NB	14	76	18	108	8	114	32	154
	EB	30	40	18	88	36	142	12	190
N. Capitol St. and E St.	SB	16	376	218	610	36	470	136	642
	WB	40	326	4	370	78	174	14	266
	NB	24	298	34	356	12	382	12	406
	EB	128	110	24	262	196	276	52	524
2nd St. and E St., NE	SB	26	206	0	232	3	36	0	39
	WB	114	0	26	140	4	0	1	5
	NB	0	112	26	138	0	14	6	20
3rd St. and E St., NE	SB	6	58	42	106	24	66	28	118
	WB	12	106	8	126	6	26	8	40
	NB	14	78	8	100	4	112	12	128
	EB	14	20	8	42	26	98	10	134
N. Capitol St. and Louisiana Ave.	SB	2	18	360	380	0	28	498	526
	WB	0	232	24	256	2	298	8	308
	NB	0	26	2	28	0	12	0	12
	EB	406	230	0	636	318	180	0	498
Louisiana Ave. and D St., NW	SB	2	438	124	564	8	574	182	764
	WB	120	246	2	368	54	182	6	242

		AM PEAK PERIOD				PM PEAK PERIOD			
		L	T	R	SUM	L	T	R	SUM
	NB	4	498	114	616	8	532	42	582
	EB	64	122	2	188	44	130	4	178
2nd St. and Mass Ave., NE	SB	8	144	62	214	8	136	192	336
	WB	10	908	46	964	8	308	16	332
	NB	90	106	4	200	100	156	4	260
	EB	60	206	76	342	168	704	72	944
Delaware Ave. and D St., NE	SB	0	0	6	6	2	0	10	12
	WB	0	290	0	290	0	298	4	302
	NB	10	2	0	12	12	0	12	24
	EB	8	396	2	406	10	290	0	300
1st St. and D St., NE	SB	78	42	16	136	76	12	46	134
	WB	54	300	26	380	6	182	2	190
	NB	6	30	6	42	58	52	20	130
	EB	140	206	64	410	56	236	6	298
2nd St. and D St., NE	SB	10	128	112	250	6	162	68	236
	WB	26	282	4	312	12	54	0	66
	NB	72	148	16	236	40	172	46	258
	EB	46	120	142	308	62	244	98	404
3rd St. and Mass Ave., NE	SB	12	0	0	12	32	2	0	34
	WB	0	1320	36	1356	0	386	20	406
	NB	66	130	18	214	52	106	10	168
	EB	0	232	0	232	0	682	0	682
3rd St. and Mass Ave., NE	SB	16	0	38	54	20	32	42	94
	NB	38	132	22	192	2	106	16	124
	EB	12	24	0	36	12	154	0	166
D St. and Mass Ave., NE	SB	0	184	2	186	0	690	12	702
	WB	0	24	14	38	0	12	26	38
	NB	290	1078	0	1368	58	370	0	428

		AM PEAK PERIOD				PM PEAK PERIOD			
		L	T	R	SUM	L	T	R	SUM
	EB	4	42	48	94	0	178	66	244
1st St. and M St., NE	SB	14	312	0	326	76	300	0	376
	WB	86	2	108	196	2	0	8	10
	NB	0	210	18	228	0	372	32	404
	EB	98	78	40	216	200	342	76	618
1st St. and L St., NE	SB	32	266	0	298	56	240	0	296
	WB	58	0	96	154	40	0	90	130
	NB	0	136	42	178	0	334	38	372
	EB	64	132	148	344	58	182	72	312
1st St., E St., Mass Ave. and Columbus Circle, NE	SB	86	54	28	168	148	86	78	312
	WB	234	964	0	1198	130	514	0	644
	NB	0	0	66	66	0	0	242	242
	EB	0	552	12	564	0	778	12	790
Louisiana Ave. and Columbus Circle, NE	WB	214	1336	0	1550	242	640	0	882
	NB	0	0	218	218	0	0	184	184
	EB	0	670	56	726	0	1040	66	1106
Delaware Ave. and Columbus Circle, NE	NB	0	0	16	16	0	0	8	8
	EB	0	814	12	826	0	1184	8	1192
1st St. and Columbus Circle, NE	NB	18	58	8	84	24	70	16	110
	EB	446	304	86	836	470	678	66	1214
Mass Ave. and Columbus Circle, NE	SB	36	250	16	302	48	326	14	388
	WB	2	1152	186	1340	0	580	114	694
	NB	0	0	0	0	0	4	4	8
Mass Ave. and Columbus Circle, NE	SB	0	0	234	234	0	0	126	126
	NB	416	406	360	1182	642	204	202	1048
	EB	14	0	0	14	18	0	0	18

A-2 Available Parking Spaces at Union Station Garage During Peak Parking Hour

	MON	TUE	WED	THU	FRI	AVERAGE
Month maximum occurred	Nov '07	Jan '08	Aug '07	Aug '07	Jan '08	--
Maximum available unoccupied spaces	917	771	642	642	766	748
Month minimum occurred	Dec '07	Jun '07	Mar '08	Mar '08	Dec '07	--
Minimum available unoccupied spaces	603	206	182	200	301	298
Average of available spaces over 12 months	755	493	372	386	570	515

Source: USRC data, March 2008

A-3 Available Parking Spaces at Union Station Garage During Peak Parking Hour Ticket Counts at Union Station Parking Garage over 12 Month Period

		TOTAL FOR MONTH		AVERAGE PER DAY		VEHICLES PER SPACE PER DAY	
		CAR	BUS	CAR	BUS	CAR	BUS
2007	April	50,188	2,160	1,673	72	0.80	0.80
	May	51,169	2,422	1,651	78	0.78	0.87
	June	53,437	1,715	1,781	57	0.85	0.64
	July	52,912	757	1,707	24	0.81	0.27
	August	49,374	407	1,593	13	0.76	0.15
	September	45,258	504	1,509	17	0.72	0.19
	October	50,800	697	1,639	22	0.78	0.25
	November	48,860	577	1,629	19	0.77	0.21
	December	54,534	268	1,759	9	0.84	0.10
2008	January	43,716	255	1,410	8	0.67	0.09
	February	43,899	521	1,514	18	0.72	0.20
	March	51,454	1,605	1,660	52	0.79	0.58
Total		595,601	11,888	1,627	32	0.77	0.36

Source: USRC data, March 2008

A-5. Summary of Bus Routes within Study Area

RT #	ROUTE	SERVICE DIRECTION	NORTH OR EAST TERMINUS	SOUTH OR WEST TERMINUS	APPROXIMATE SERVICE TIME
80	North Capitol St. Line	N/S	Fort Totten Metro	Kennedy Center	5 AM – 2 AM NB, 4:30 Am – 1 AM SB
96	East Capitol St. – Cardozo Line	E/W	Capitol Heights Metro	McLean Gardens	5 AM – 1:30 AM
97				Union Station	6-9 AM, 3-5:30 PM only
D1	Sibley Hospital – Stadium-Armory Line	E/W	Ivy City	Glover Park	4-7 AM WB, 7-10 PM EB
D3				Sibley Hospital	7-10 AM WB, 3-6:30 PM EB
D6					4:30 AM – 1:30 AM WB, 5AM – 2:30 AM EB
				Stadium-Armory Metro	
D4	Ivy City – Union Station Line	E/W	Ivy City	Union Station	4AM – 1AM WB, 4:30 AM – 1:30 AM EB
D8	Hospital Center Line	N/S	Washington Hospital Center	Union Station	5:30 AM – 1:30 AM
N22	Navy Yard Shuttle Line	N/S	Union Station	Navy Yard	6 AM – 10:30 PM
X1	Benning Road Line	E/W	Minnesota Ave. Metro	Potomac Park/State Department	6-9:30 AM WB, 3:30 – 6:30 PM EB
X3				McLean Gardens	6-9:30 AM WB, 3:30 – 6:30 PM EB
X2	Benning Road – H St. Line	E/W	Minnesota Ave. Metro	Lafayette Square	4:30 AM – 2:30 AM WB, 4AM – 3 AM EB
X8	Maryland Avenue Line	E/W	Carver Terrace	Union Station	6 AM – 10 PM WB, 6 AM – 10:30 PM EB

Source: WMATA Bus Schedule as of April 2008Figure

A-4 Parking Rates for the Union Station Parking Garage

FEE TYPE	HOURS						
	0-1	1-2	2-3	3-4	4-5	5-12	12-24
Regular	\$6.00	\$9.00	\$12.00	\$13.00	\$15.00	\$17.00	\$19.00
2 hrs validation	\$1.00	\$1.00	\$9.00	\$13.00	\$15.00	\$17.00	\$19.00
3 hrs validation	\$1.00	\$1.00	\$1.00	\$13.00	\$15.00	\$17.00	\$19.00

A-6. Overall Weekday Ridership of Metrobus Routes Servicing Union Station Study Area

Bus Line	Total Line Rider- ship ¹ (May 2008)	Study Area ²			
		Boardings	% of ridership	Alightings	% of ridership
80	8,449	1,641	19.4%	1,353	16.0%
96, 97	4,930	738	15.0%	988	20.0%
D1, D3, D6	6,367	525	8.2%	494	7.8%
D4	1,410	581	41.2%	479	34.0%
D8	4,704	804	17.1%	604	12.8%
N22	1,468	304	20.7%	338	23.0%
X1, X3	1,415	88	6.2%	116	8.2%
X2	13,846	1,356	9.8%	1,174	8.5%
X8	1,522	491	32.3%	481	31.6%
TOTAL STUDY AREA LINES	44,112	6,427	14.6%	5,918	13.4%
SUBTOTAL, REGULAR DC LINES	240,860				
DAILY WMATA SYSTEM GRAND TOTAL	461,223				

1 – Metrobus Ridership by Jurisdiction and Line report for May 2008

2 – Data scaled to May 2008 ridership from detailed data collected 2000-2003

A-7. Metrobus Daily Boardings/Alightings at Busiest Bus Stops

	INTERSECTION							
	N. CAPITOL & H ST.	COLUMBUS CIRCLE/MASS AVE. & 1ST ST. NE	COLUMBUS PLAZA BUS BAY	N. CAPITOL & MASS AVE.	N. CAPITOL & K ST.	N. CAPITOL & M ST.	N. CAPITOL & G PL. NW	N. CAPITOL ST. & I ST.
3:00 AM - 5:29 AM								
Boardings	51	14	5	8	2	2	2	0
Alightings	44	43	17	26	3	5	0	1
5:30 AM - 9:29 AM								
Boardings	533	601	205	255	75	63	28	47
Alightings	618	521	596	305	129	92	133	13
9:30 AM - 2:59 PM								
Boardings	986	428	244	247	151	149	15	96
Alightings	819	544	220	278	153	152	63	28
3:00 PM - 6:59 PM								
Boardings	959	467	550	375	75	81	22	61
Alightings	542	511	247	367	74	89	48	10
7:00 PM - 2:59 AM								
Boardings	212	156	275	127	9	7	2	10
Alightings	159	72	55	68	18	25	12	3
Daily Total								
Boardings	2,540	1,665	1,279	930	311	301	68	214
Alightings	2,182	1,691	1,135	849	376	362	255	54

Source: WMATA 2003

A-8. Weekday Hourly Metrobus Volumes at Busiest Intersections

Intersection	N. Capitol St. & H St.	Mass Ave. & N. Capitol	Mass Ave. & Columbus Cir./1st St.	Columbus Plaza ¹
Routes Served	80, 96, D1, D3, D4, X1, X2	N22, D8, 80, D6, D4, 96, D1,D3, X1	N22, D8, D6, D4, 96	97, D4, D8, X8
3 AM - 4 AM	0	0	0	0
4 AM - 5 AM	10	8	7	2
5 AM - 6 AM	25	23	17	6
6 AM - 7 AM	42	48	35	17
7 AM - 8 AM	54	56	39	20
8 AM - 9 AM	58	59	38	23
9 AM - 10 AM	48	52	35	14
10 AM - 11 AM	39	37	29	8
11 AM - 12 NOON	40	41	31	8
12 NOON - 1 PM	36	41	33	8
1 PM - 2 PM	37	37	29	8
2 PM - 3 PM	38	38	30	9
3 PM - 4 PM	50	48	37	19
4 PM - 5 PM	63	62	44	25
5 PM - 6 PM	55	59	42	25
6 PM - 7 PM	46	49	39	15
7 PM - 8 PM	31	33	26	8
8 PM - 9 PM	24	28	24	7
9 PM - 10 PM	25	29	24	6
10 PM - 11 PM	26	27	23	6
11 PM - 12 AM	22	22	18	3
12 AM - 1 AM	17	17	13	1
1 AM - 2 AM	0	0	0	0
2 AM - 3 AM	0	0	0	0

Source: WMATA Bus schedules as of April 2008

¹-Bus frequency at Columbus Plaza only counted once for an inbound/outbound bus combination; at other locations, each direction a bus passes is counted distinctly

A-9. Number of Commuter Bus Runs Servicing Union Station Area and DC

	MTA	PRTC	LC	Martz	Quick's	VC
3 AM - 4 AM	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
4 AM - 5 AM	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
5 AM - 6 AM	1 (4)	0 (3)	0 (0)	0 (0)	0 (0)	0 (0)
6 AM - 7 AM	9 (39)	0 (14)	2 (4)	0 (3)	1 (3)	1 (1)
7 AM - 8 AM	8 (51)	1 (23)	6 (9)	0 (4)	0 (0)	0 (0)
8 AM - 9 AM	10 (49)	0 (13)	10 (13)	0 (4)	0 (0)	0 (0)
9 AM - 10 AM	1 (12)	0 (6)	2 (4)	0 (0)	0 (0)	0 (0)
10 AM - 11 AM	0 (1)	0 (1)	0 (0)	0 (0)	0 (0)	0 (0)
11 AM - 12 NOON	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
12 NOON - 1 PM	1 (5)	0 (6)	0 (0)	0 (0)	0 (0)	0 (0)
1 PM - 2 PM	0 (1)	0 (3)	1 (1)	0 (0)	0 (0)	0 (0)
2 PM - 3 PM	1 (9)	0 (3)	0 (0)	0 (0)	0 (0)	0 (0)
3 PM - 4 PM	9 (45)	0 (17)	7 (9)	0 (5)	1 (2)	0 (1)
4 PM - 5 PM	10 (61)	0 (22)	10 (14)	0 (3)	0 (1)	0 (0)
5 PM - 6 PM	7 (34)	1 (19)	5 (5)	0 (3)	0 (0)	0 (0)
6 PM - 7 PM	3 (8)	0 (4)	0 (0)	0 (1)	0 (0)	0 (0)
7 PM - 8 PM	0 (2)	0 (4)	0 (0)	0 (0)	0 (0)	0 (0)
TOTAL	60 (321)	2 (138)	43 (59)	0 (23)	2 (6)	1 (2)

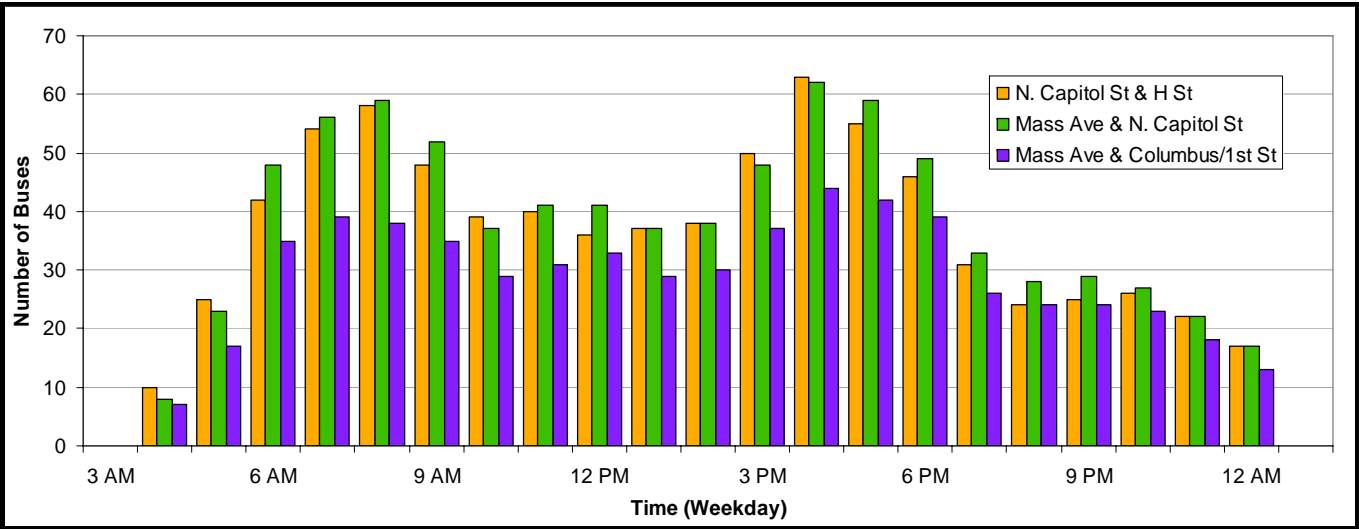
Source: Commuter bus published schedules
Format: Buses in study vicinity (buses within DC)

A-10. Commuter Rail Ridership at Union Station by Hour

Time Period	MARC Trains ¹		VRE Trains ²	
	Arriving	Departing	Arriving	Departing
5 – 6 AM	615	35	0	0
6 - 7 AM	3174	78	292	1
7 - 8 AM	3606	205	642	0
8 - 9 AM	5019	176	389	0
9 - 10 AM	1149	64	156	0
10 - 11 AM	337	89	0	0
11 - 12 PM	208	120	0	0
12 - 1 PM	145	227	0	23
1 - 2 PM	117	206	0	23
2 - 3 PM	123	262	0	0
3 - 4 PM	320	1081	1	244
4 - 5 PM	458	4267	0	482
5 - 6 PM	98	4327	0	382
6 - 7 PM	164	2478	2	331
7 - 8 PM	133	586	0	0

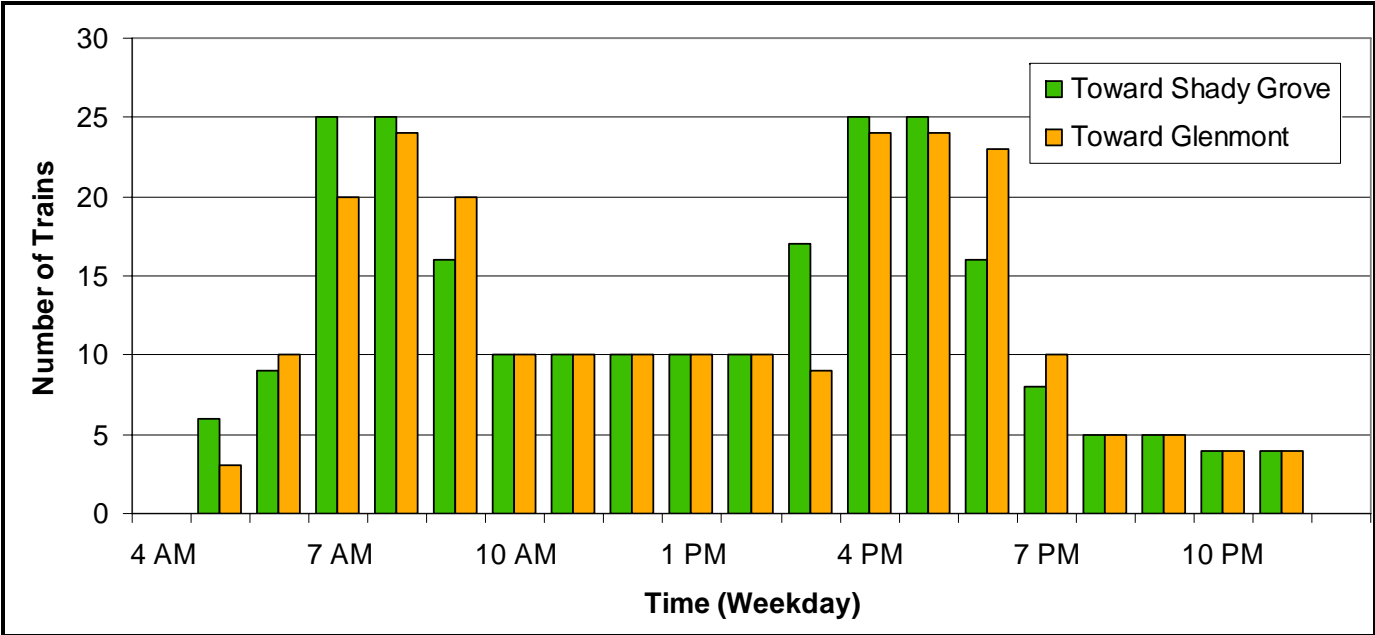
1 – MARC Ridership provided by MARC Staff, August 2008
2 – VRE ridership estimated from volumes provided on VRE website, scaled by 19% rule of thumb recommended by Christine Hoeffner

A-11. Scheduled Weekday Metrobus Volumes



Source: WMATA Bus schedules

A-12. Scheduled Metrorail Volume at Union Station

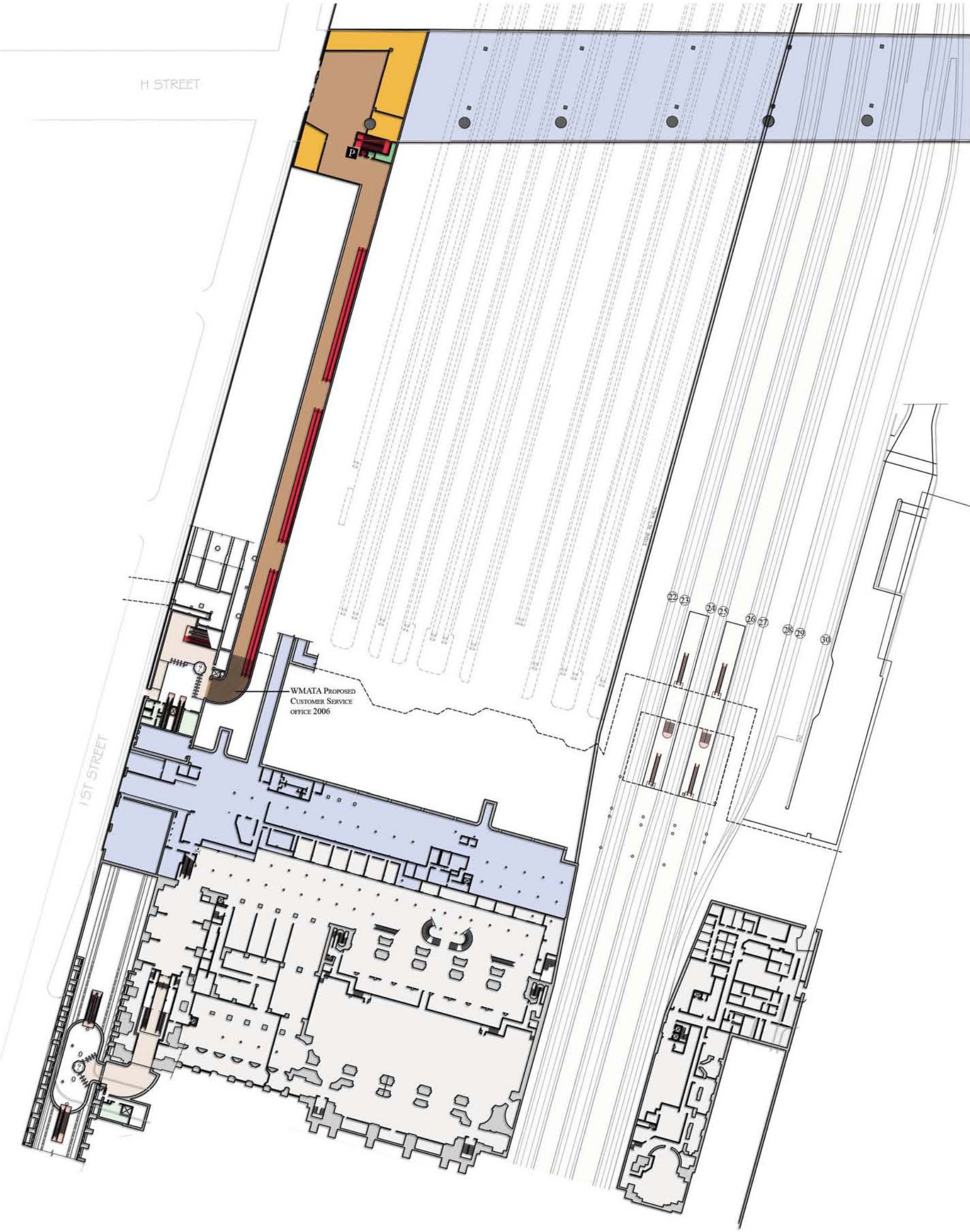


Source: WMATA Metrorail schedules

B












APPENDIX B: Conceptual Design Drawings













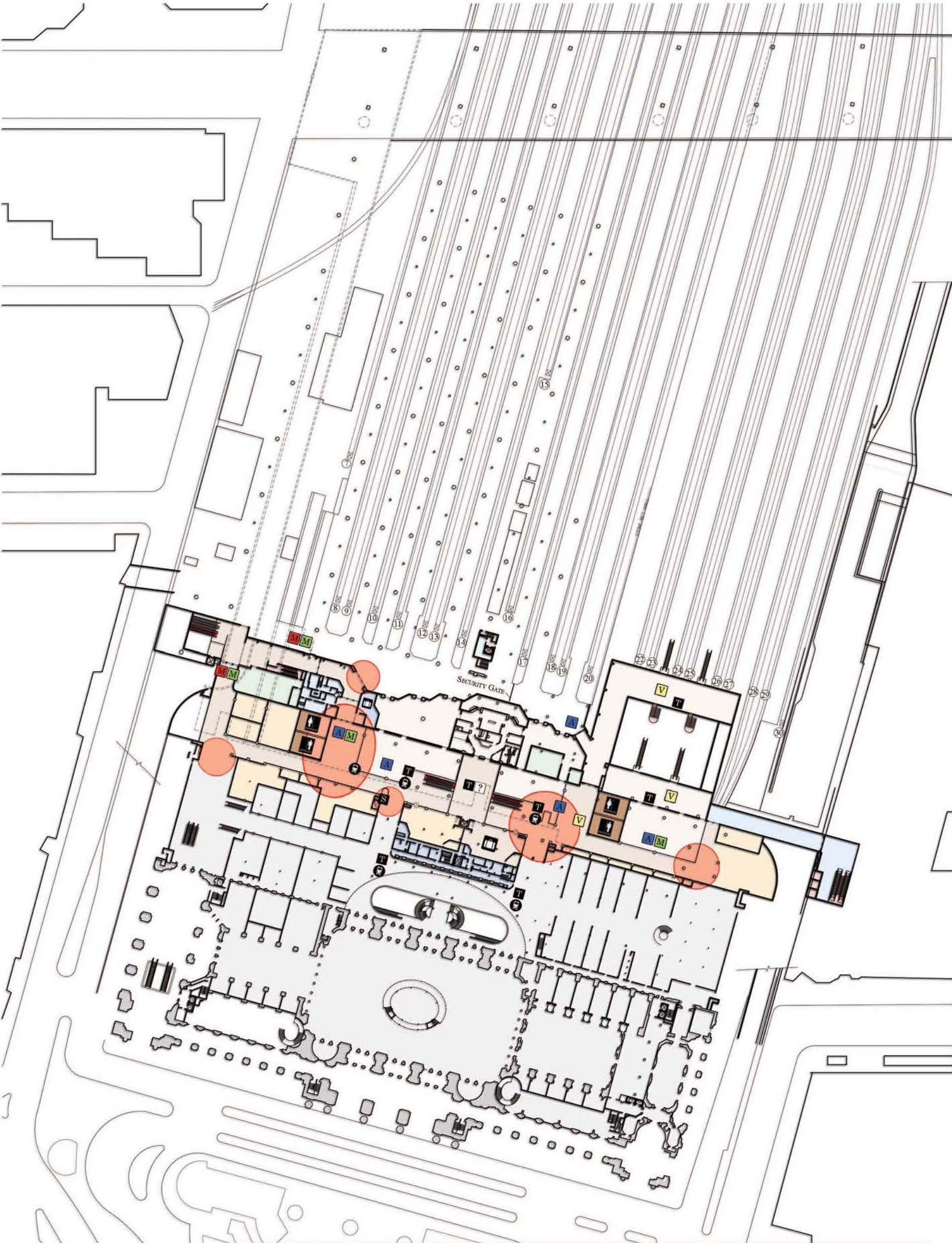


USITC
LOWER LEVEL
0-24MONTHS

DDOT
PARSONS
DEL▲STUDIO ARCHITECTS INC.

SYMBOL LEGEND	
	SECURITY
	BAGGAGE
	INFORMATION
	RESTROOMS
	TICKET KIOSK/MACHINE
	GARAGE
	TRAIN SCHEDULE DISPLAY
COLOR CODED SIGNAGE	
	METRO SIGNAGE
	AMTRAK SIGNAGE
	MARC SIGNAGE
	VRE SIGNAGE

AREA LEGEND	
	PUBLIC AREA CIRCULATION
	RETAIL/FOOD SERVICE
	WAITING/ HOLDING AREA
	UNDISTURBED AREA
	VERTICAL CIRCULATION
	EXISTING VERTICAL CIRCULATION
	GENERAL PRIVATE ACCESS AREA
	MECH/ELECT. EQUIPMENT ROOM
	SERVICE AREA
	EXISTING PEDESTRIAN TRAFFIC CONFLICTS



USITC
MAIN LEVEL
0-24 MONTHS

DDOT
PARSONS
DEL▲STUDIO ARCHITECTS INC.

SECURITY

BAGGAGE

INFORMATION

RESTROOMS

TICKET KIOSK/MACHINE

GARAGE

TRAIN SCHEDULE DISPLAY

COLOR CODED SIGNAGE

METRO SIGNAGE

AMTRAK SIGNAGE

MARC SIGNAGE

VRE SIGNAGE

PUBLIC AREA CIRCULATION

RETAIL/FOOD SERVICE

WAITING/ HOLDING AREA

UNDISTURBED AREA

VERTICAL CIRCULATION

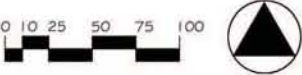
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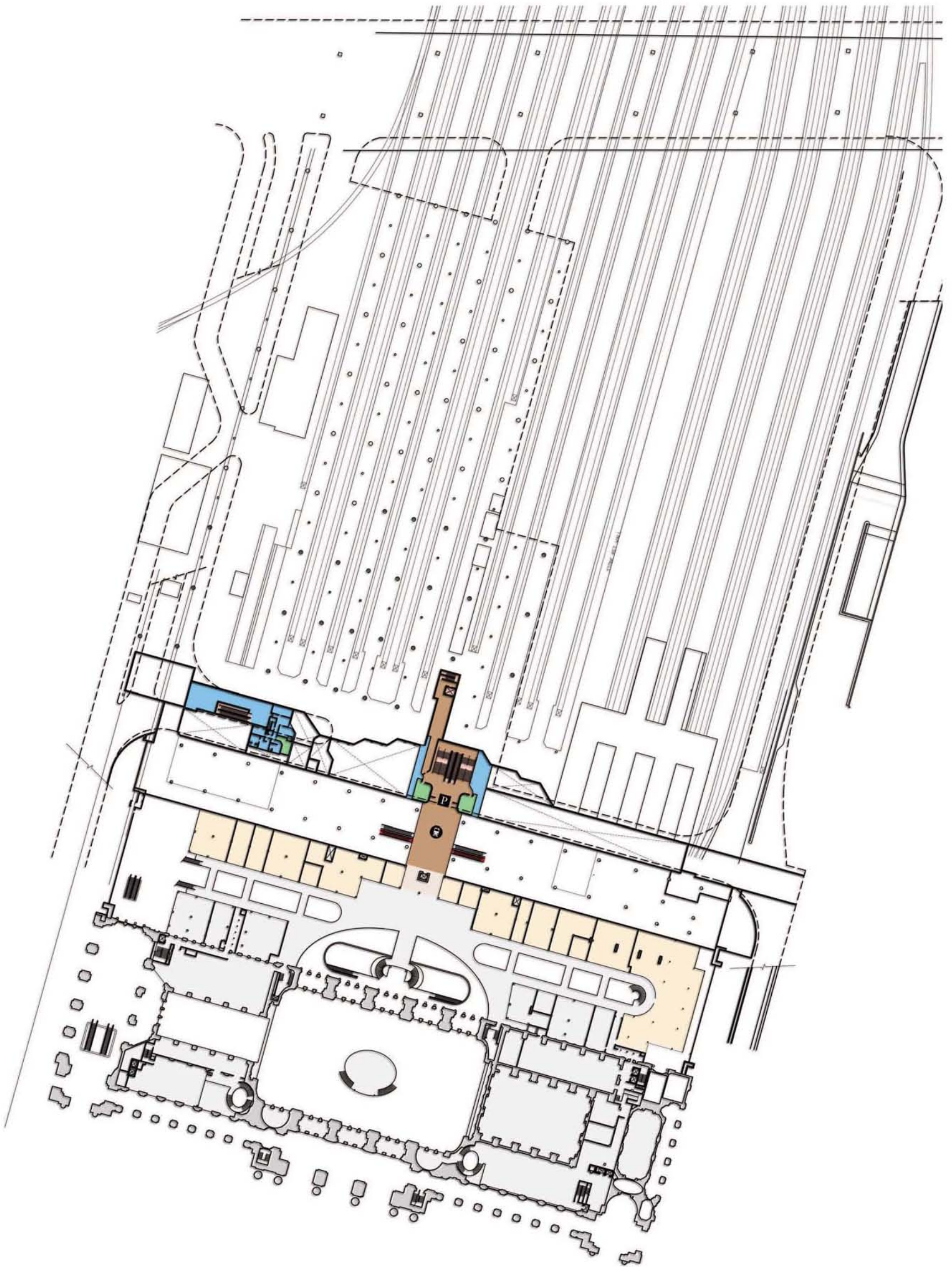
GENERAL PRIVATE ACCESS AREA

MECH/ELECT. EQUIPMENT ROOM

SERVICE AREA









EXISTING PEDESTRIAN TRAFFIC CONFLICTS













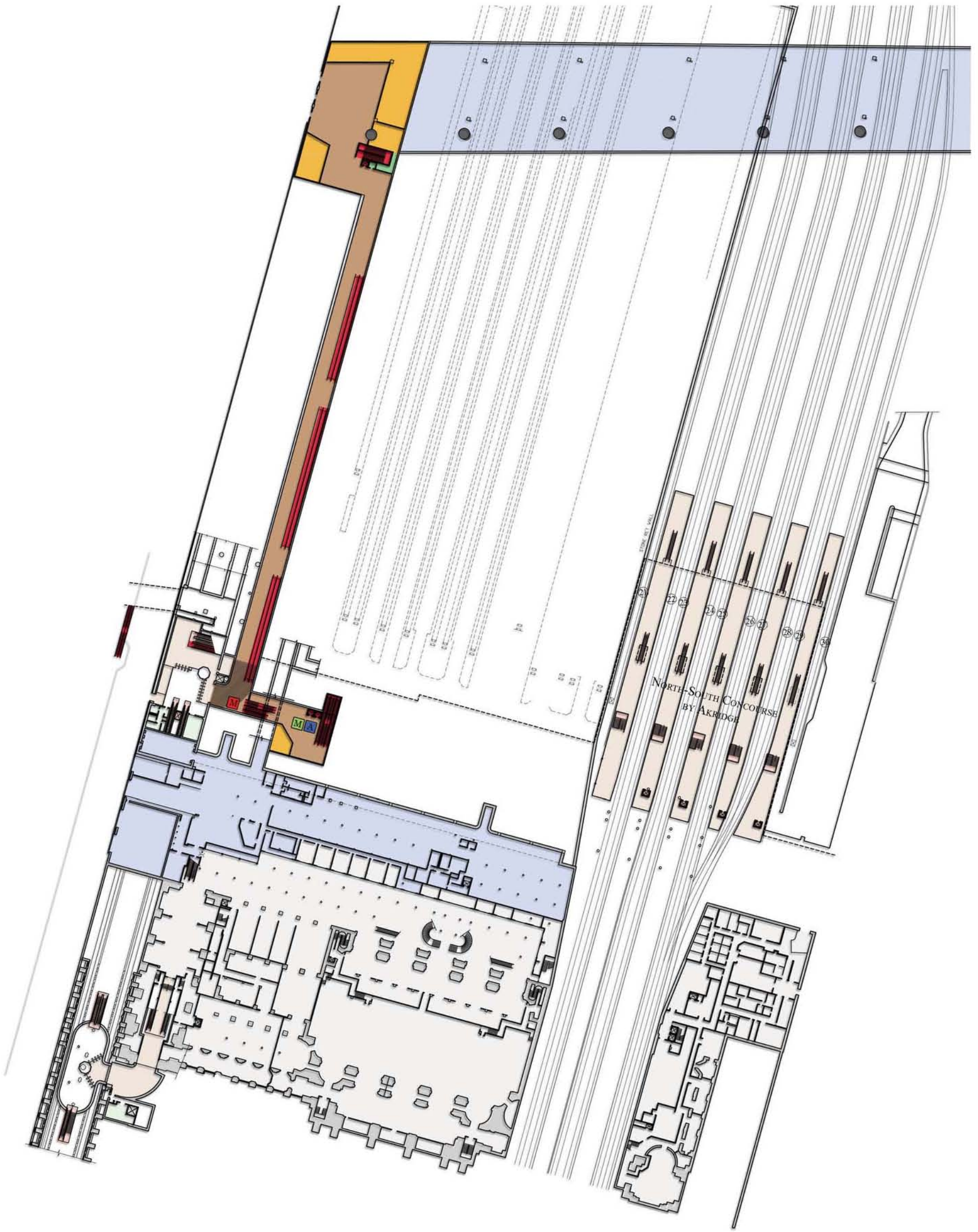


USITC MEZZANINE LEVEL 0-24 MONTHS

DDOT
PARSONS
DEL▲STUDIO ARCHITECTS INC.

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	RESTROOMS	
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	GARAGE	
	TRAIN SCHEDULE DISPLAY	 METRO SIGNAGE

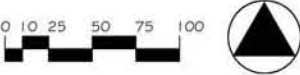
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	WAITING/ HOLDING AREA
	UNDISTURBED AREA
	VERTICAL CIRCULATION
	EXISTING VERTICAL CIRCULATION
	GENERAL PRIVATE ACCESS AREA
	MECH/ELECT. EQUIPMENT ROOM
	SERVICE AREA
	EXISTING PEDESTRIAN TRAFFIC CONFLICTS



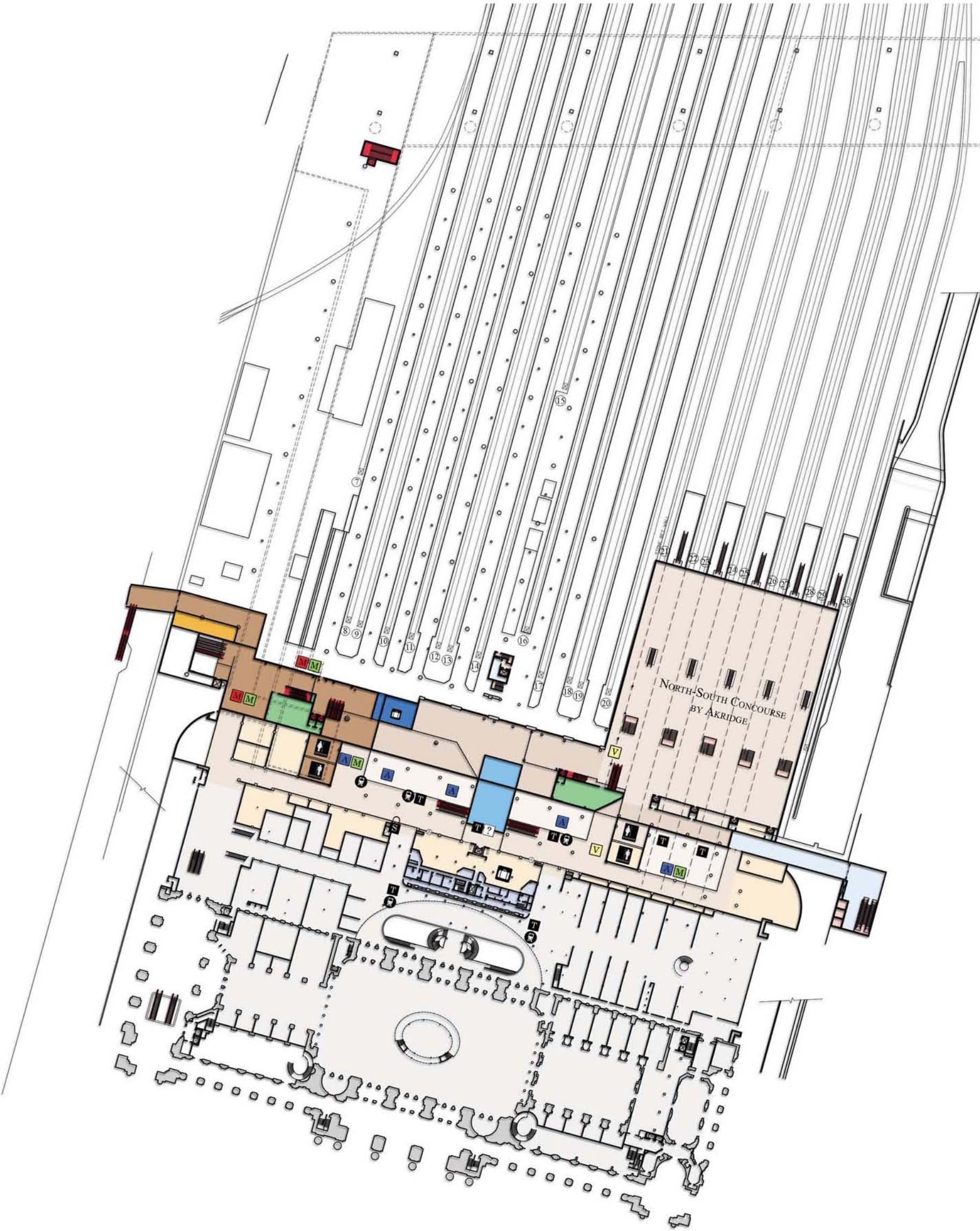
USITC
LOWER LEVEL
10-20 YEARS

DDOT
PARSONS
DEL▲STUDIO ARCHITECTS INC.

SYMBOL LEGEND	
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	INFORMATION
	RESTROOMS
	TICKET KIOSK/MACHINE
	GARAGE
	TRAIN SCHEDULE DISPLAY
COLOR CODED SIGNAGE	
	METRO SIGNAGE
	AMTRACK SIGNAGE
	MARC SIGNAGE
	VRE SIGNAGE
	GREYHOUND















AREA LEGEND	
	PUBLIC AREA CIRCULATION
	RETAIL/FOOD SERVICE
	WAITING/ HOLDING AREA
	UNDISTURBED AREA
	VERTICAL CIRCULATION
	EXISTING VERTICAL CIRCULATION
	GENERAL PRIVATE ACCESS AREA
	MECH/ELECT. EQUIPMENT ROOM
	SERVICE AREA
	EXISTING PEDESTRIAN TRAFFIC CONFLICTS













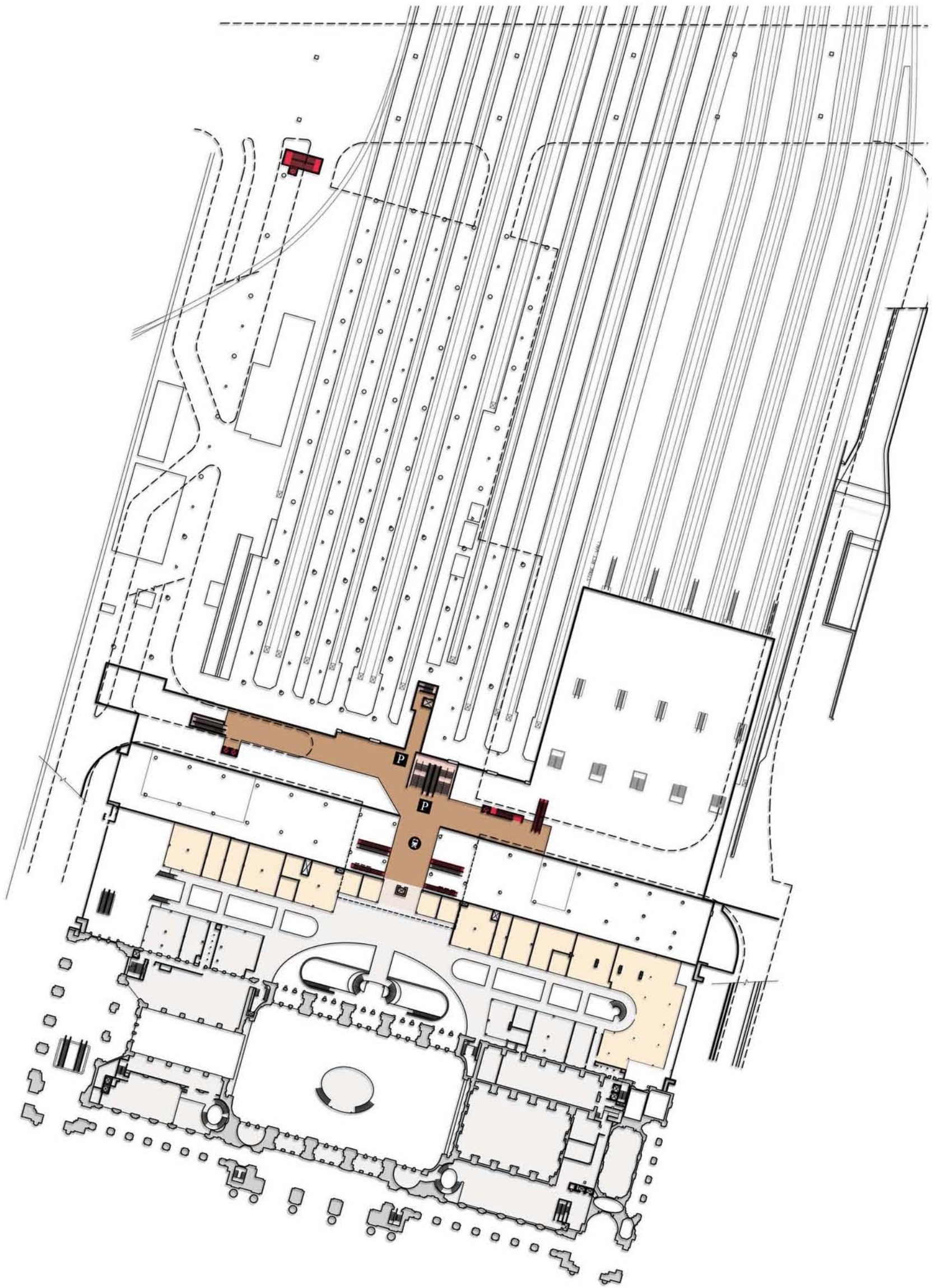
USITC
MAIN LEVEL
10-20 YEARS

DDOT
PARSONS
DEL▲STUDIO ARCHITECTS INC.

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	INFORMATION
	RESTROOMS
	TICKET KIOSK/MACHINE
	GARAGE
	TRAIN SCHEDULE DISPLAY
COLOR CODED SIGNAGE	
	METRO SIGNAGE
	AMTRAK SIGNAGE
	MARC SIGNAGE
	VRE SIGNAGE
	GREYHOUND

























AREA LEGEND	
	PUBLIC AREA CIRCULATION
	RETAIL/FOOD SERVICE
	WAITING/ HOLDING AREA
	UNDISTURBED AREA
	VERTICAL CIRCULATION
	EXISTING VERTICAL CIRCULATION
	GENERAL PRIVATE ACCESS AREA
	MECH/ELECT. EQUIPMENT ROOM
	SERVICE AREA
	EXISTING PEDESTRIAN TRAFFIC CONFLICTS



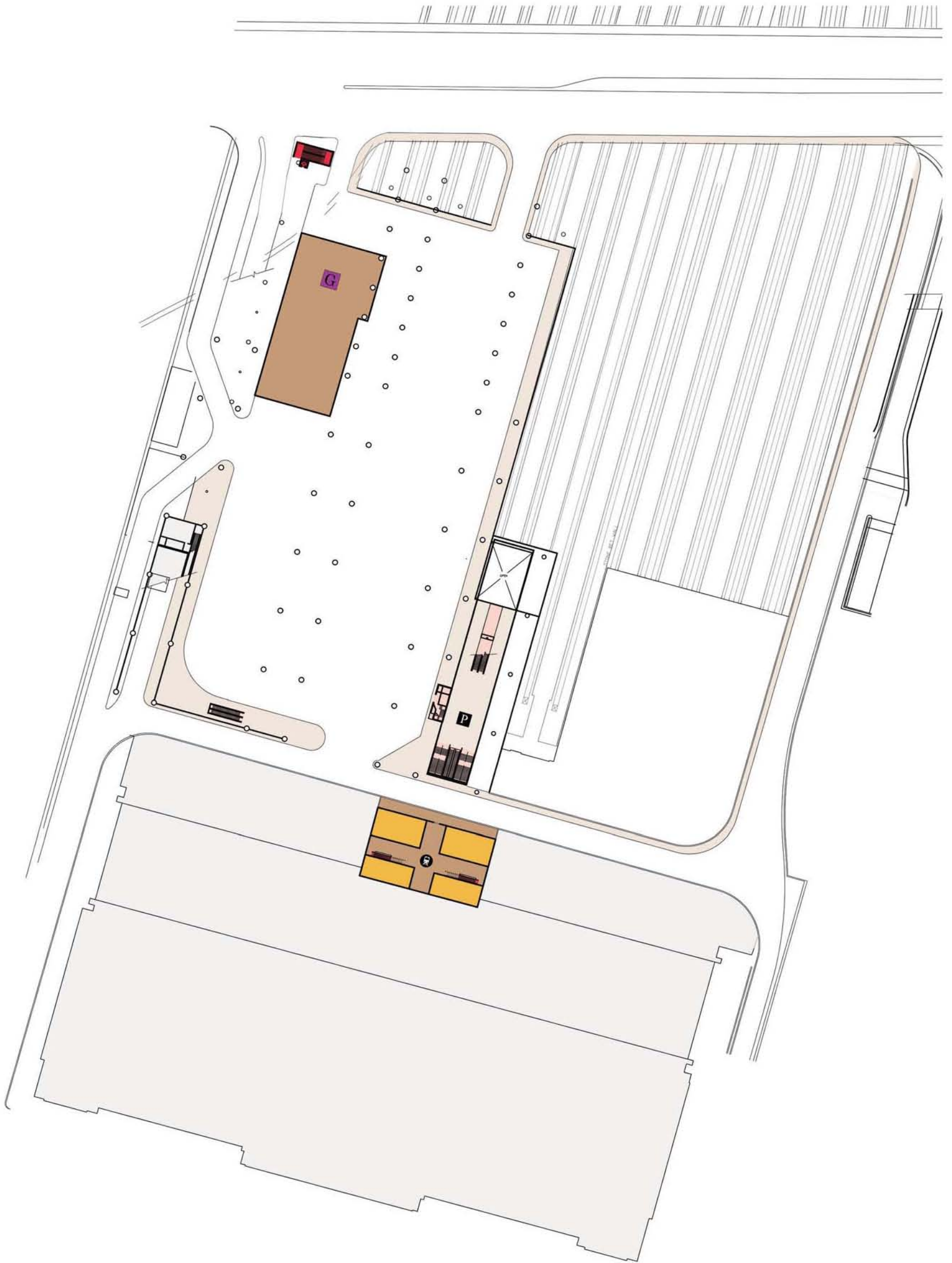
USITC
MEZZANINE LEVEL
10-20 YEARS

DDOT
PARSONS
DEL▲STUDIO ARCHITECTS INC.

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	BAGGAGE
	INFORMATION
	RESTROOMS
	TICKET KIOSK/MACHINE
	GARAGE
	TRAIN SCHEDULE DISPLAY
COLOR CODED SIGNAGE	
	METRO SIGNAGE
	AMTRAK SIGNAGE
	MARC SIGNAGE
	VRE SIGNAGE
	GREYHOUND













AREA LEGEND	
	PUBLIC AREA CIRCULATION
	RETAIL/FOOD SERVICE
	WAITING/ HOLDING AREA
	UNDISTURBED AREA
	VERTICAL CIRCULATION
	EXISTING VERTICAL CIRCULATION
	GENERAL PRIVATE ACCESS AREA
	MECH/ELECT. EQUIPMENT ROOM
	SERVICE AREA
	EXISTING PEDESTRIAN TRAFFIC CONFLICTS













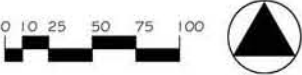


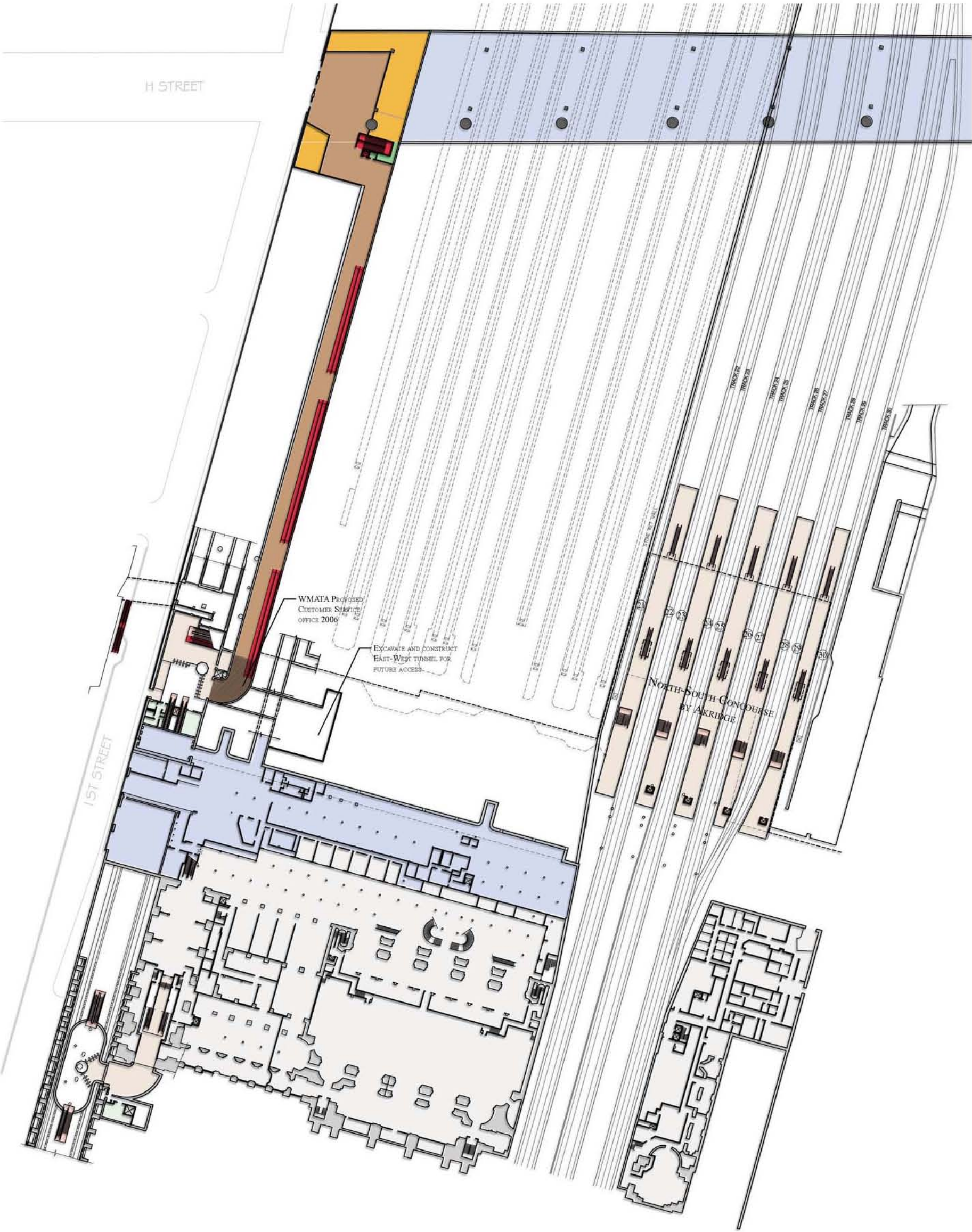
USITC
PARKING DECK
10-20 YEARS

DDOT
PARSONS
DEL▲STUDIO ARCHITECTS INC.

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	INFORMATION		AMTRAK SIGNAGE
	RESTROOMS		MARC SIGNAGE
	TICKET KIOSK/MACHINE		VRE SIGNAGE
	GARAGE		GREYHOUND
	TRAIN SCHEDULE DISPLAY		













AREA LEGEND	
	PUBLIC AREA CIRCULATION
	RETAIL/FOOD SERVICE
	WAITING/ HOLDING AREA
	UNDISTURBED AREA
	VERTICAL CIRCULATION
	EXISTING VERTICAL CIRCULATION
	GENERAL PRIVATE ACCESS AREA
	MECH/ELECT. EQUIPMENT ROOM
	SERVICE AREA
	EXISTING PEDESTRIAN TRAFFIC CONFLICTS















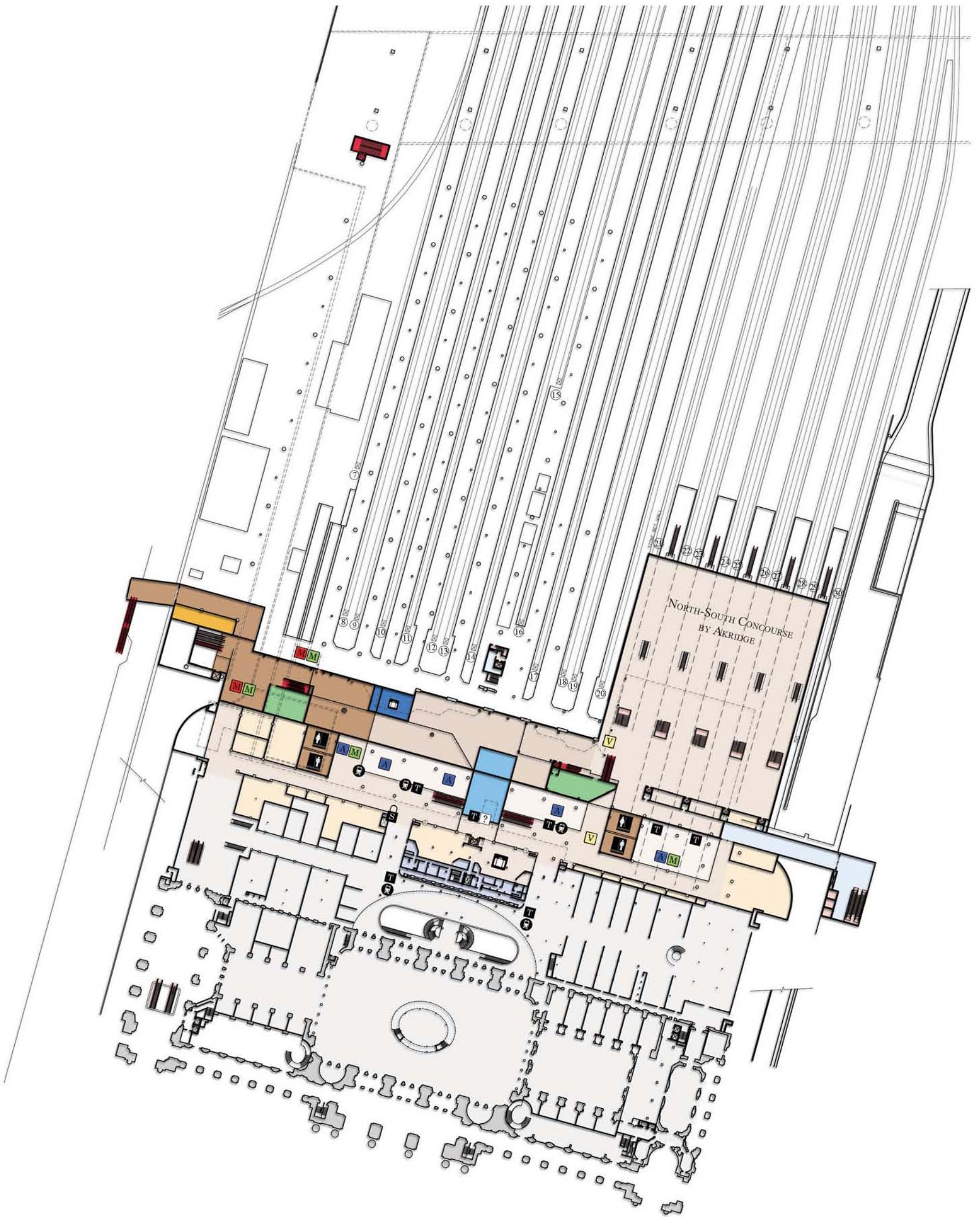
USITC
LOWER LEVEL
2-10 YEARS

DDOT
PARSONS
DEL▲STUDIO ARCHITECTS INC.

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	BAGGAGE	
	INFORMATION	
	RESTROOMS	
	TICKET KIOSK/MACHINE	
	GARAGE	
	TRAIN SCHEDULE DISPLAY	
	METRO SIGNAGE	
	AMTRAK SIGNAGE	
	MARC SIGNAGE	
	VRE SIGNAGE	
	GREYHOUND	

























AREA LEGEND	
	PUBLIC AREA CIRCULATION
	RETAIL/FOOD SERVICE
	WAITING/ HOLDING AREA
	UNDISTURBED AREA
	VERTICAL CIRCULATION
	EXISTING VERTICAL CIRCULATION
	GENERAL PRIVATE ACCESS AREA
	MECH/ELECT. EQUIPMENT ROOM
	SERVICE AREA
	EXISTING PEDESTRIAN TRAFFIC CONFLICTS

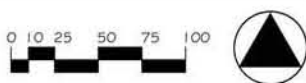


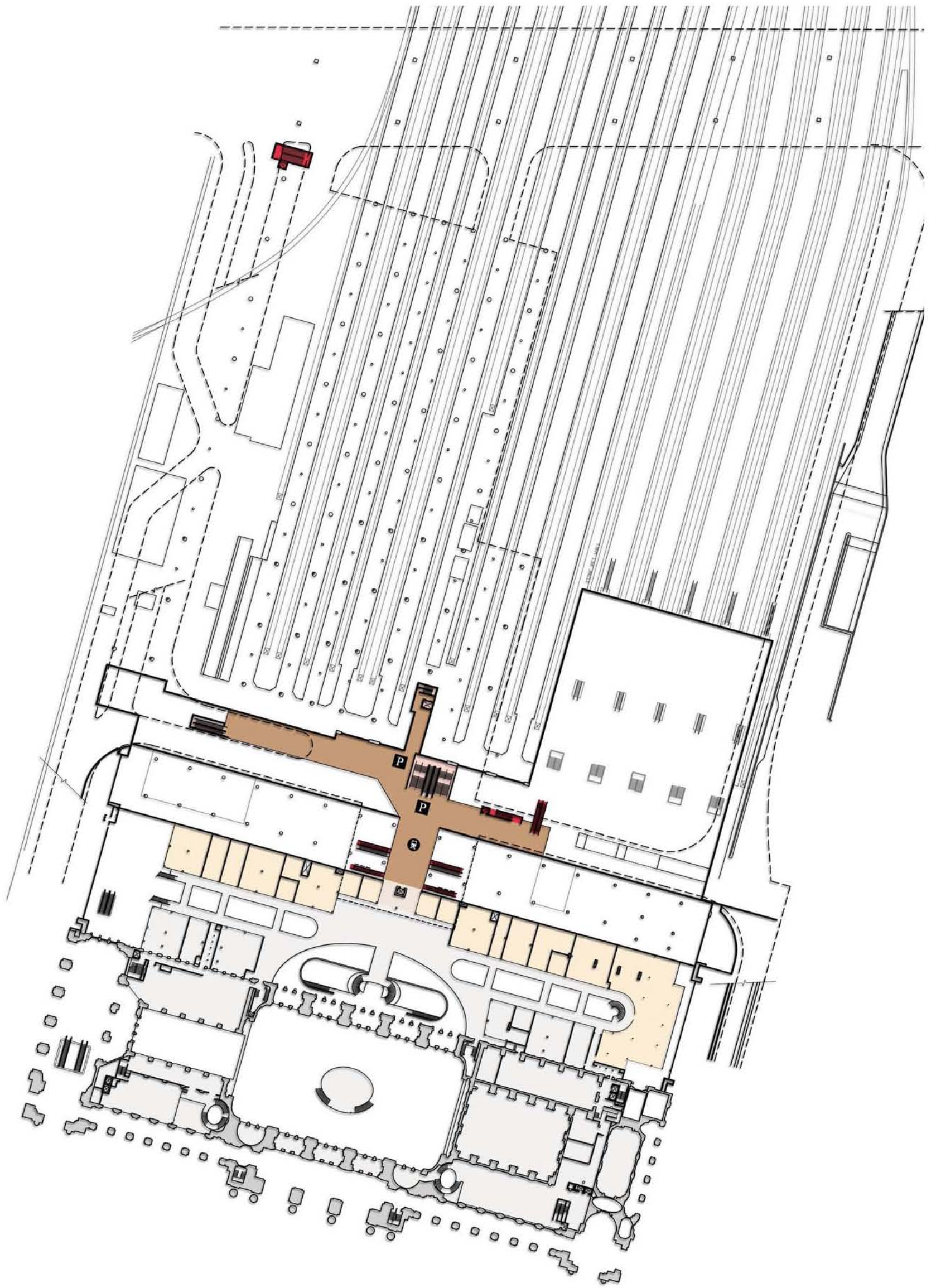
USITC
MAIN LEVEL
2-10 YEARS

DDOT
PARSONS
DEL▲STUDIO ARCHITECTS INC.

SYMBOL LEGEND		
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	BAGGAGE	
	INFORMATION	
	RESTROOMS	
	TICKET KIOSK/MACHINE	
	GARAGE	
	TRAIN SCHEDULE DISPLAY	
	METRO SIGNAGE	
	AMTRAK SIGNAGE	
	MARC SIGNAGE	
	VRE SIGNAGE	
	GREYHOUND	













AREA LEGEND	
	PUBLIC AREA CIRCULATION
	RETAIL/FOOD SERVICE
	WAITING/ HOLDING AREA
	UNDISTURBED AREA
	VERTICAL CIRCULATION
	EXISTING VERTICAL CIRCULATION
	GENERAL PRIVATE ACCESS AREA
	MECH/ELECT. EQUIPMENT ROOM
	SERVICE AREA
	EXISTING PEDESTRIAN TRAFFIC CONFLICTS













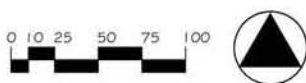


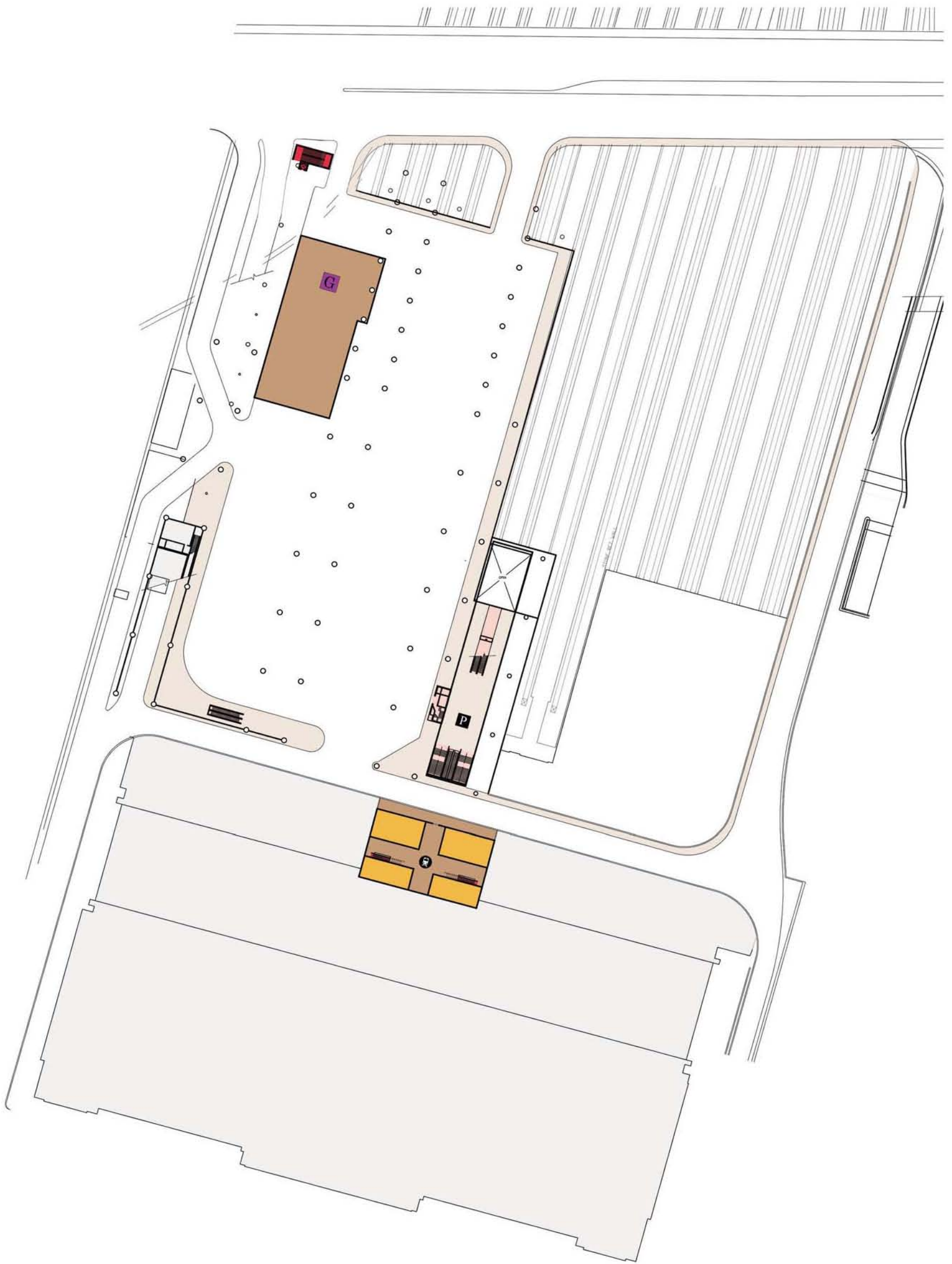
USITC
MEZZANINE LEVEL
2-10 YEARS

DDOT
PARSONS
DEL▲STUDIO ARCHITECTS INC.

SYMBOL LEGEND	
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	BAGGAGE
	INFORMATION
	RESTROOMS
	TICKET KIOSK/MACHINE
	GARAGE
	TRAIN SCHEDULE DISPLAY
COLOR CODED SIGNAGE	
	METRO SIGNAGE
	AMTRAK SIGNAGE
	MARC SIGNAGE
	VRE SIGNAGE
	GREYHOUND













AREA LEGEND	
	PUBLIC AREA CIRCULATION
	RETAIL/FOOD SERVICE
	WAITING/ HOLDING AREA
	UNDISTURBED AREA
	VERTICAL CIRCULATION
	EXISTING VERTICAL CIRCULATION
	GENERAL PRIVATE ACCESS AREA
	MECH/ELECT. EQUIPMENT ROOM
	SERVICE AREA
	EXISTING PEDESTRIAN TRAFFIC CONFLICTS













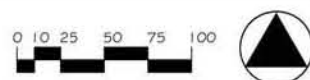


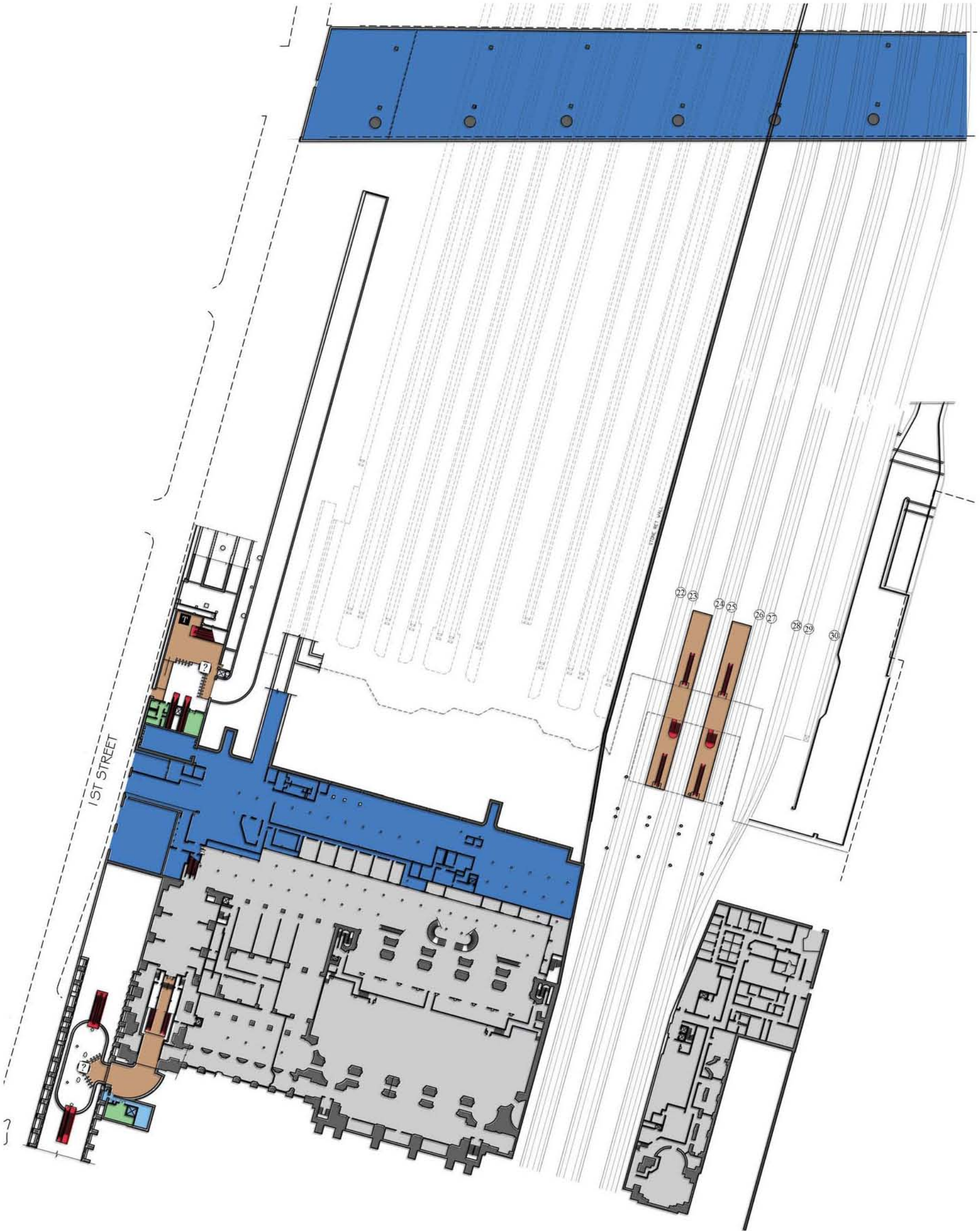
USITC PARKING DECK 2-10 YEARS

DDOT
PARSONS
DEL▲STUDIO ARCHITECTS INC.

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	INFORMATION	
	RESTROOMS	
	TICKET KIOSK/MACHINE	
	GARAGE	
	TRAIN SCHEDULE DISPLAY	
	METRO SIGNAGE	
	AMTRAK SIGNAGE	
	MARC SIGNAGE	
	VRE SIGNAGE	
	GREYHOUND	












AREA LEGEND	
	PUBLIC AREA CIRCULATION
	RETAIL/FOOD SERVICE
	WAITING/ HOLDING AREA
	UNDISTURBED AREA
	VERTICAL CIRCULATION
	EXISTING VERTICAL CIRCULATION
	GENERAL PRIVATE ACCESS AREA
	MECH/ELECT. EQUIPMENT ROOM
	SERVICE AREA
	EXISTING PEDESTRIAN TRAFFIC CONFLICTS













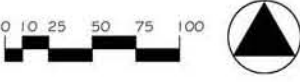


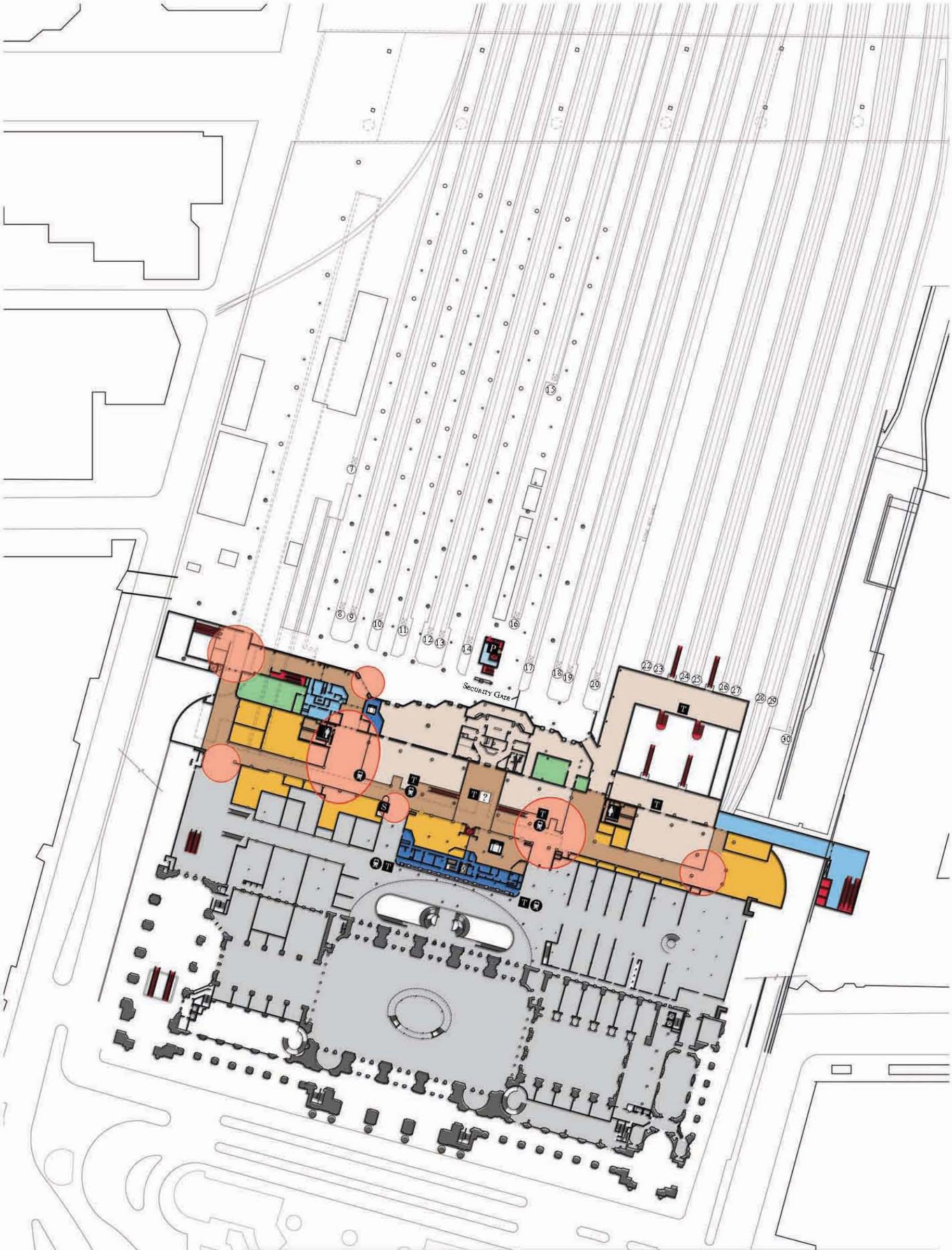
USITC
LOWER LEVEL
EXISTING

DDOT
PARSONS
DEL▲STUDIO ARCHITECTS INC.

SYMBOL LEGEND		
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	BAGGAGE	
	INFORMATION	
	RESTROOMS	
	TICKET KIOSK/MACHINE	
	GARAGE	
	TRAIN SCHEDULE DISPLAY	
	METRO SIGNAGE	
	AMTRAK SIGNAGE	
	MARC SIGNAGE	
	VRE SIGNAGE	

AREA LEGEND	
	PUBLIC AREA CIRCULATION
	RETAIL/FOOD SERVICE
	WAITING/ HOLDING AREA
	UNDISTURBED AREA
	VERTICAL CIRCULATION
	EXISTING VERTICAL CIRCULATION
	GENERAL PRIVATE ACCESS AREA
	MECH/ELECT. EQUIPMENT ROOM
	SERVICE AREA
	EXISTING PEDESTRIAN TRAFFIC CONFLICTS



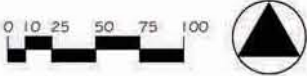


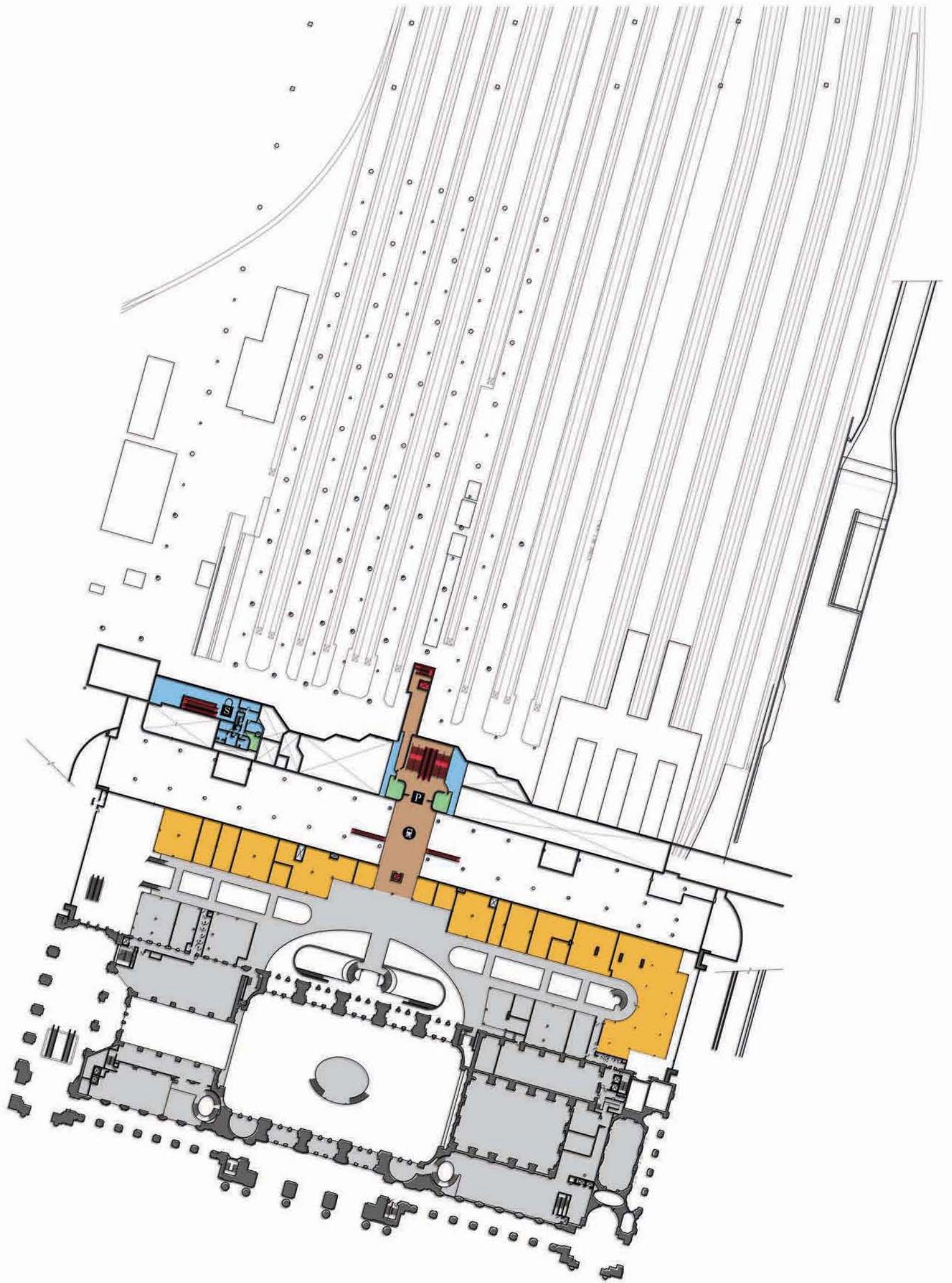
USITC
MAIN LEVEL
EXISTING

DDOT
PARSONS
DELSTUDIO ARCHITECTS INC.

SYMBOL LEGEND		
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	INFORMATION	
	RESTROOMS	
	TICKET KIOSK MACHINE	
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




AREA LEGEND	
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	RETAIL/FOOD SERVICE
	WAITING/ HOLDING AREA
	UNDISTURBED AREA
	VERTICAL CIRCULATION
	EXISTING VERTICAL CIRCULATION
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	MECH/ELECT. EQUIPMENT ROOM
	SERVICE AREA
	EXISTING PEDESTRIAN TRAFFIC CONFLICTS













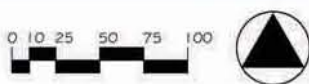


USITC MEZZANINE LEVEL EXISTING

DDOT
PARSONS
DELSTUDIO ARCHITECTS INC.

SYMBOL LEGEND		
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	BAGGAGE	
	INFORMATION	
	RESTROOMS	
	TICKET KIOSK MACHINE	
	GARAGE	
	TRAIN SCHEDULE DISPLAY	
	METRO SIGNAGE	
	AMTRAK SIGNAGE	
	MARC SIGNAGE	
	VRE SIGNAGE	

AREA LEGEND	
	PUBLIC AREA CIRCULATION
	RETAIL/FOOD SERVICE
	WAITING/ HOLDING AREA
	UNDISTURBED AREA
	VERTICAL CIRCULATION
	EXISTING VERTICAL CIRCULATION
	GENERAL PRIVATE ACCESS AREA
	MECH/ELECT. EQUIPMENT ROOM
	SERVICE AREA
	EXISTING PEDESTRIAN TRAFFIC CONFLICTS





APPENDIX C: Detailed Cost Elements

Rec Code	Description	Area	Prelim Cost	Quantity	Unit	Unit Cost	Other Cost Explanation	Total Estimated Cost
A-1	Traffic Flow and Pedestrian Safety on Columbus Circle	Columbus Plaza -- Area A	Cost assigned to another project					
B-1	Train Concourse Connector	Train Concourse -- Area B	\$4,598,125					
	- Selective Demolition & Relocations			1	LS	\$150,000		\$150,000
	--- SUBTOTAL							\$150,000
	- Basic Civil & Architectural Work			4,000	SF	\$150		\$600,000
	--- SUBTOTAL							\$600,000
	- Heavy construction and preparation							
	-- Tunnel Construction (100' X 40')			100	LF	\$12,500		\$1,250,000
	-- Underpinning			200	LF	\$4,500		\$900,000
	-- Flagging & Track Support Requirements			1	LS	\$100,000		\$100,000
	-- Vertical Transportation			1	LS	\$400,000		\$400,000
	-- Miscellaneous Work			1	LS	\$150,000		\$150,000
	--- SUBTOTAL							\$2,800,000
	- Electrical and Lighting							
	-- Lighting fixtures			125	EA	\$525		\$65,625
	-- Branch conduit/wire for lighting			3,000	EA	\$18		\$54,000
	-- Upgrade electrical distribution system			1	LS	\$75,000		\$75,000
	-- Upgrade emergency electrical distribution system			1	LS	\$25,000		\$25,000
	-- Electrical feeder work			1	LS	\$110,000		\$110,000
	-- Branch conduit/wire for signage allowance			1,500	LF	\$18		\$27,000
	-- Upgrade fire alarm system - slave panel			1	LS	\$25,000		\$25,000
	-- Fire alarm system misc. devices			65	EA	\$400		\$26,000
	-- Branch conduit/wire for signage			2,000	LF	\$15		\$30,000
	-- CCTV and PA systems allowance			1	LS	\$80,000		\$80,000
	-- Electrical feeders/disconnects for escalators			4	EA	\$5,500		\$22,000
	-- Electrical feeder/disconnect switch for hydraulic elevator			1	EA	\$5,500		\$5,500
	-- Lighting Controls			1	LS	\$10,000		\$10,000
	-- Control wiring			1	LS	\$35,000		\$35,000
	--- SUBTOTAL							\$590,125
	- Plumbing, HVAC, other MEP							
	-- Sprinkler heads allowance for tunnel			100	EA	\$650		\$65,000

Rec Code	Description	Area	Prelim Cost	Quantity	Unit	Unit Cost	Other Cost Explanation	Total Estimated Cost
	-- Sprinkler fire hose cabinets			5	EA	\$2,500		\$12,500
	-- Upgrade of existing sprinkler system and piping for new heads and fire hose cabinets			1	LS	\$35,000		\$35,000
	-- Plumbing work allowance			1	LS	\$50,000		\$50,000
	-- Air handling units			2	EA	\$45,000		\$90,000
	-- Galvanized steel ductwork allowance			10,000	Lbs	\$3		\$30,000
	-- Diffusers, grilles, dampers, louvers allowance			1	LS	\$17,500		\$17,500
	-- HVAC controls allowance			1	LS	\$45,000		\$45,000
	-- Air cool unit for elevator machine room			1	EA	\$13,000		\$13,000
	-- Testing/inspection/commissioning allowance			1	LS	\$45,000		\$45,000
	-- Miscellaneous MEP work allowance			1	LS	\$55,000		\$55,000
	--- SUBTOTAL							\$458,000
	SUBTOTAL							\$4,598,125
	(Details)							
B-2	North Entrance/Taxi Lane	Train Concourse -- Area B	\$949,000					
	Selective Demolition & Relocations			1	LS	\$45,000		\$45,000
	Basic Civil & Architectural Work			10,000	SF	\$75		\$750,000
	Miscellaneous Work			1	LS	\$120,000		\$120,000
	Add lighting fixtures for taxi stand allowance			20	EA	\$950		\$19,000
	Miscellaneous MEP work for taxi stand			1	LS	\$15,000		\$15,000
	SUBTOTAL							\$949,000
	(Details)							
B-3	Extend North Concourse to north New North South Concourse	Train Concourse -- Area B	\$21,660,000					Updated to Reflect Akridge Estimate
	Abatement & Remediation		Allowance		Allowance			\$200,000
	Demolition of bubble structure, existing vertical transportation and platform canopies		sf	20,000	sf	\$8		\$150,000
	Architectural							
	New restrooms		sf	2,500	sf	\$200		\$500,000
	Mezzanine level walkway and stair		sf	3,000	sf	\$125		\$375,000
	Full-height glass and alum window wall with blast and acoustic - west and north		sf	8,000	sf	\$150		\$1,200,000
	Gate vestibules with automatic doors		ea	15	ea	\$30,000		\$450,000
	New floor throughout - 75% terrazo and 25% carpet		sf	45,000	sf	\$25		\$1,125,000
	New clerestory to introduce natural light		sf	3,000	sf	\$150		\$450,000

Rec Code	Description	Area	Prelim Cost	Quantity	Unit	Unit Cost	Other Cost Explanation	Total Estimated Cost
	Structual							
	Foundations and concourse support columns		ea	36	ea	\$10,000		\$360,000
	Structural frame above the tracks		sf	90,000	sf	\$100		\$9,000,000
	MEP							
	MEP systems, including WiFi		sf	45,000	sf	\$25		\$1,125,000
	Lower track ventilation		sf	45,000	sf	\$5		\$225,000
	Lighting for circulation and waiting areas		sf	90,000	sf	\$10		\$900,000
	Vertical Transportation							
	Escalators connecting the concourse to the lower track level		ea	10	ea	\$300,000		\$3,000,000
	Elevators connecting the concourse to the lower track level		ea	5	ea	\$200,000		\$1,000,000
	Escalators connecting the concourse to the Burnham Place platform		ea	4	ea	\$300,000		\$1,200,000
	Elevator connecting the concourse to the Burnham Place platform		ea	2	ea	\$200,000		\$400,000
	SUBTOTAL							\$21,660,000
	(Details)							
B-4	Expand East-West Concourse to north	Train Concourse -- Area B	\$11,630,000					Updated to Akridge Estimate, adjusting square footage to reflect separate Mezzanine line item
	Abatement & Remediation				Allowance			\$100,000
	Demolition			42,000	sf	\$7		\$315,000
	Architectural							
	New restrooms			5,000	sf	\$200		\$1,000,000
	New retail shell space at the concourse level			15,000	sf	\$75		\$1,125,000
	New Acela lounge			4,000	sf	\$150		\$600,000
	Full-height glass and aluminum window wall with blast and acoustic enhancements			12,000	sf	\$150		\$1,800,000
	Gate vestibules with automatic doors			8	ea	\$30,000		\$240,000
	New floor throughout - 75% terrazo and 25% carpet			42,000	sf	\$25		\$1,050,000
	New skylights to introduce natural light - 300 sf each			15	ea	\$100,000		\$1,500,000
	MEP							
	New MEP systems			42,000	sf	\$40		\$1,680,000
	New lighting for circulation and waiting areas			42,000	sf	\$10		\$420,000
	Vertical Transportation							
	Two new escalators connecting the concourse to the expanded mezzanine			4	ea	\$300,000		\$1,200,000

Rec Code	Description	Area	Prelim Cost	Quantity	Unit	Unit Cost	Other Cost Explanation	Total Estimated Cost
	One new elevator connecting the concourse to the expanded mezzanine			3	ea	\$200,000		\$600,000
	SUBTOTAL							\$11,630,000
	(Details)							
B-5	Expand the Mezzanine Level	Train Concourse -- Area B	\$4,632,500					Updated to Akridge Estimate, adjusting square footage to reflect updated East-West Concourse line item
	- Add Vertical Access to H St., MARC, Metro & Mezzanine Bridge							
	-- Selective Demolition & Relocations			1	LS	\$80,000		\$80,000
	-- Basic Civil & Architectural Work			1,000	SF	\$150		\$150,000
	-- Miscellaneous Work			1	LS	\$45,000		\$45,000
	-- Electrical feeders for escalators and elevator including disconnect switches			3	EA	\$5,500		\$16,500
	-- Control wiring for escalators/elevators			1	LS	\$15,000		\$15,000
	-- Air cool unit for elevator machine room			1	EA	\$13,000		\$13,000
	-- Fire alarm work for escalators/elevator			1	LS	\$3,500		\$3,500
	-- Testing/Inspection/Commissioning of escalators and elevator			1	LS	\$4,500		\$4,500
	--- SUBTOTAL							\$327,500
	- Improve Mezzanine Level							
	-- Selective Demolition & Relocations			1	LS	\$85,000		\$85,000
	-- Relocation of Stores			1	LS	\$100,000		\$100,000
	- Add Structural System			30,000	SF	\$29		\$870,000
	-- Basic Civil & Architectural Work			30,000	SF	\$85		\$2,550,000
	-- Miscellaneous Work			1	LS	\$250,000		\$250,000
	-- Selective MEP demolition/relocation allowance			1	LS	\$15,000		\$15,000
	-- Allowance for MEP work for new retail stores (assuming 3 retails)			3	EA	\$145,000		\$435,000
	--- SUBTOTAL							\$4,305,000
	SUBTOTAL							\$4,632,500
	(Details)							
C-1	Construct Bikestation	First Street -- Area C	Cost assigned to another project					
C-2	Metropolitan Branch Trail	First Street -- Area C	\$27,000					
	- Signage							

Rec Code	Description	Area	Prelim Cost	Quantity	Unit	Unit Cost	Other Cost Explanation	Total Estimated Cost
	-- Signs			276	SF	\$50.00		\$13,800
	-- Sign Posts			124	ft	\$50.00		\$6,200
	-- Pavement markings - 4" wide, linear			4,000	ft	\$1.25		\$5,000
	-- Pavement markings - Bicycle Emblem			10	EA	\$200.00		\$2,000
	SUBTOTAL							\$27,000
	(Details)							
C-3	Improvements to First Street NE	First Street -- Area C	Cost assigned to another project					
C-4	Conduct Metrorail Station Access Study	First Street -- Area C	\$250,000					
D-1	North Pedestrian Walkway	H Street -- Area D	\$1,850,325					
	Selective Demolition & Relocations			1	LS	\$100,000		\$100,000
	Basic Civil & Architectural Work			28,025	SF	\$150		\$4,203,750
	Miscellaneous Work			1	LS	\$65,000		\$65,000
	Walkway Construction			50	LF	\$12,500		\$625,000
	Underpinning			100	LF	\$4,500		\$450,000
	Miscellaneous Work			1	LS	\$0		\$0
	Upgrade existing electrical distribution system			1	LS	\$65,000		\$65,000
	Upgrade existing emergency dist. System			1	LS	\$10,000		\$10,000
	Lighting fixtures in extended walkway			25	EA	\$525		\$13,125
	Branch conduit/wiring for lighting			1,500	LF	\$15		\$22,500
	Branch conduit/wiring for signage			800	LF	\$15		\$12,000
	Control wiring for escalators/elevator			1	LS	\$21,000		\$21,000
	Electrical feeders			1	LS	\$14,000		\$14,000
	Miscellaneous electrical work			1	LS	\$6,500		\$6,500
	Electrical feeders for mechanical equipment			1	LS	\$9,500		\$9,500
	Lighting fixtures in new retail lobby			80	EA	\$525		\$42,000
	Fire alarm conduit/wire for extended part of walkway			1	LS	\$4,500		\$4,500
	Fire alarm devices in extended part of the walkway			1	LS	\$2,200		\$2,200
	Security and PA system			1	LS	\$20,000		\$20,000
	Air handling units for extended walkway			1	EA	\$25,000		\$25,000
	Sprinkler heads for extended part of walkway			20	EA	\$650		\$13,000
	Lighting work in finished part of the walkway allowance			1	LS	\$175,000		\$175,000
	Electrical distribution system work in partially finished part of the walkway			1	LS	\$75,000		\$75,000
	Ductwork/piping/accessories for HVAC system			1	LS	\$25,000		\$25,000
	Allowance for miscellaneous HVAC work in partially finished part of the walkway			1	LS	\$10,000		\$10,000
	Allowance for sprinkler work in partially complete part of the walkway to H street			1	LS	\$45,000		\$45,000

Rec Code	Description	Area	Prelim Cost	Quantity	Unit	Unit Cost	Other Cost Explanation	Total Estimated Cost
	New retails/kiosks in new lobby			3	EA	\$40,000	If items relating to lobby are removed, these will need to go	\$0
	HVAC work in new retail lobby including the air distribution and ductwork allowance			1	LS	\$150,000	If items relating to lobby are removed, these will need to go	\$0
	Fire alarm work for new retail lobby allowance			1	LS	\$65,000	If items relating to lobby are removed, these will need to go	\$0
	Miscellaneous MEP work			1	LS	\$25,000	If items relating to lobby are removed, these will need to go	\$0
	LESS BASIC CIVIL & ARCHITECTURAL WORK (apply to First Street Lobby instead???)			28,025	SF	-\$150		-\$4,203,750
	SUBTOTAL							\$1,850,325
	(Details)							
D-2	First Street Lobby	H Street -- Area D	\$5,035,000					
	Basic Civil & Architectural Work			28,500	SF	\$150	Changed from 28025 SF as in the North Pedestrian Walkway estimate	\$4,275,000
	New retails/kiosks in new lobby			3	EA	\$40,000	Taken from North Pedestrian Walkway estimate	\$120,000
	HVAC work in new retail lobby including the air distribution and ductwork allowance			1	LS	\$150,000	Taken from North Pedestrian Walkway estimate	\$150,000
	Fire alarm work for new retail lobby allowance			1	LS	\$65,000	Taken from North Pedestrian Walkway estimate	\$65,000
	Miscellaneous MEP work			1	LS	\$25,000	Taken from North Pedestrian Walkway estimate	\$25,000
	Some sort of vertical transportation			1	LS	\$400,000		\$400,000
	SUBTOTAL							\$5,035,000
	(Details)							
D-3	Incorporate Streetcar into H Street	H Street -- Area D	\$5,291,600					
	- Track construction			6,200	LF	\$418		\$2,591,600
	- Maintenance and storage facility			1	LS	\$2,700,000		\$2,700,000

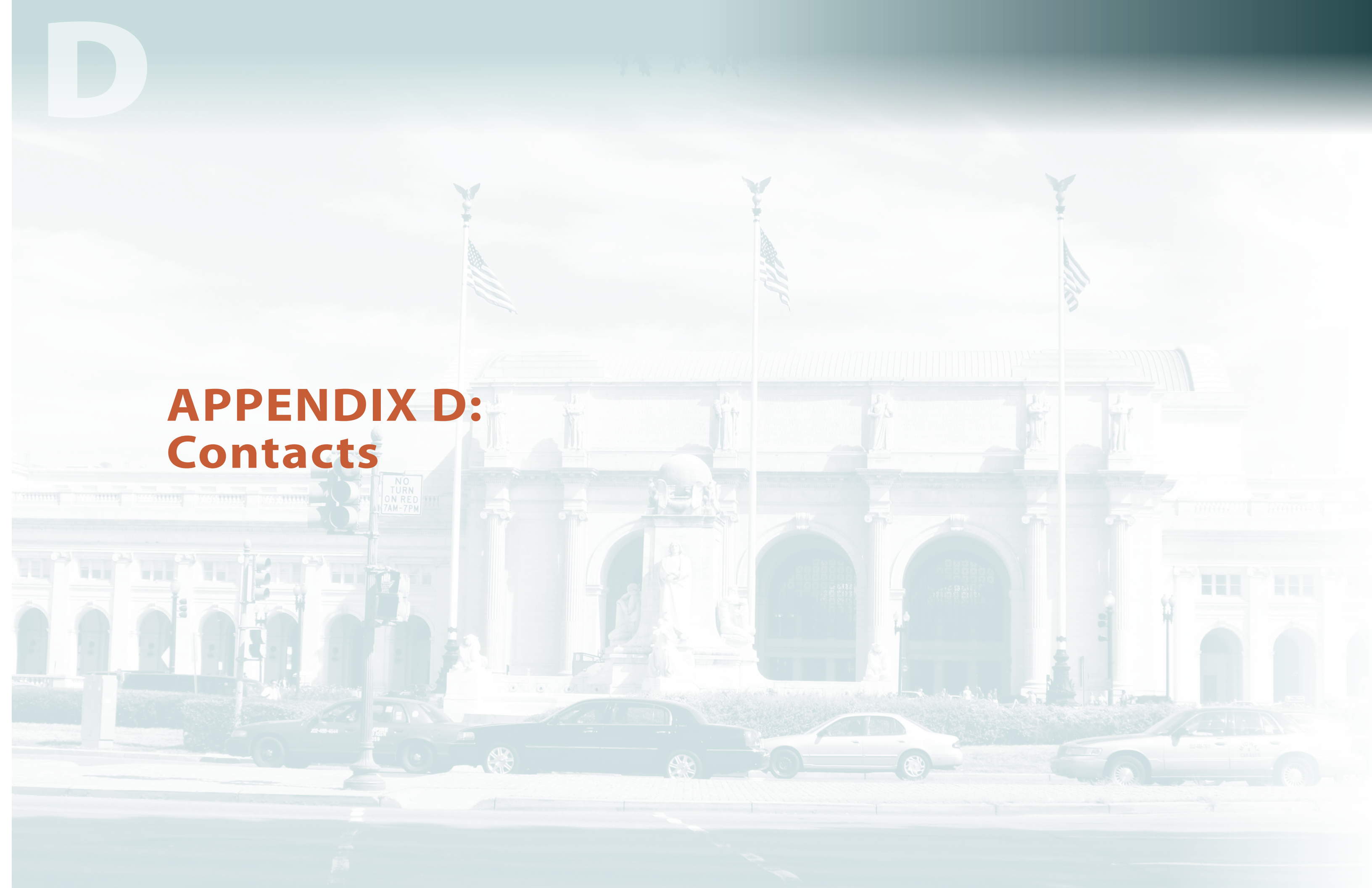
Rec Code	Description	Area	Prelim Cost	Quantity	Unit	Unit Cost	Other Cost Explanation	Total Estimated Cost
	SUBTOTAL							\$5,291,600
	(Details)							
D-4	Emergency Egress at H Street	H Street -- Area D	\$4,986,510					
	- Escalators from lower level platform							
	--Escalator (30' rise)			1	EA	\$600,000		\$600,000
	--Excavation (per 30' rise escalator)			650	CY	\$35		\$22,750
	--Hard surface excavation (per 30' rise escalator)			22	CY	\$120		\$2,640
	--Footing concrete (per 30' rise escalator)			40	CY	\$500		\$20,000
	--Wall concrete (per 30' rise escalator)			186	CY	\$480		\$89,280
	--Reinforcing steel (per 30' rise escalator)			80,000	Lb	\$1		\$120,000
	--- SUBTOTAL (per escalator)							\$854,670
	--- SUBTOTAL (provide (2) 30' rise escalators from lower level tracks)					\$854,670		\$1,709,340
	- Escalators from upper level platform							
	--Escalator (40' rise)			1		\$700,000		\$700,000
	--Excavation (per 40' rise escalator)			1,100		\$35		\$38,500
	--Hard surface excavation (per 40' rise escalator)			22		\$120		\$2,640
	--Footing concrete (per 40' rise escalator)			50		\$500		\$25,000
	--Wall concrete (per 40' rise escalator)			300		\$480		\$144,000
	--Reinforcing steel (per 40' rise escalator)			121,500		\$1		\$182,250
	--- SUBTOTAL (per escalator)							\$1,092,390
	--- SUBTOTAL (provide (3) 40' rise escalators from upper level tracks)					\$1,092,390		\$3,277,170
	Subtotal							\$4,986,510
	(Details)							
D-5	Facilities Improvements at H Street	H Street -- Area D	\$12,868,000					
	Allowance for cleanup			1	LS	\$58000		\$58,000
	Structural and Architectural Improvements			70,000	sf	\$166		\$11,620,000
	Mechanical Work			1	LS	\$490,000		\$490,000
	Electrical Work			1	LS	\$350,000		\$350,000
	Fire Life Safety Elements			1	LS	\$350,000		\$350,000
	-H St tunnel upgrades SUBTOTAL							\$12,868,000
	(Details)							
E-1	Catenary for Platforms 8-9 / High Level Platform for Tracks 25-26	Tracks/Parking Garage -- Area E	\$320,000					
	Track 8			1,700	ft	\$100		\$170,000

Rec Code	Description	Area	Prelim Cost	Quantity	Unit	Unit Cost	Other Cost Explanation	Total Estimated Cost
	Track 9			1,500	ft	\$100		\$150,000
	SUBTOTAL							\$320,000
	(Details)							
E-2	High level platforms for Tracks 25-26	Tracks/Parking Garage -- Area E	\$540,288					
	High level platform			50,400	SF	\$10.72		\$540,288
	SUBTOTAL							\$540,288
	(Details)							
E-3	Intercity Bus Connections	Tracks/Parking Garage -- Area E	\$2,479,170					
	Civil Structural and Architectural Improvement			12,000	sf	\$166		\$1,992,000
	Mechanical Work			12,000	sf	\$7		\$84,000
	Electrical Work			12,000	sf	\$5		\$60,000
	Fire Life Safety Elements			12,000	sf	\$5		\$60,000
	--SUBTOTAL							\$2,196,000
	Site Prep Labor							
	-Clean-up							
	--Crew			160	M-hr	\$40		\$6,400
	--Trucks			48	Hr	\$120		\$5,760
	---SUBTOTAL							\$12,160
	-Paving / Deck Extension							
	--Pavement - PCC slab extension			60	CY	\$820		\$49,200
	-- Sidewalks			75	CY	\$50		\$3,750
	-- PCC curb			5	CY	\$350		\$1,750
	--Pavement markings			4,248	LF	\$1		\$5,310
	---SUBTOTAL							\$60,010
	-Signing							
	Dynamic Signage Allowance				ls			200000
	--Signs			120	SF	\$50		\$6,000
	--Posts			100	ft	\$50		\$5,000
	---SUBTOTAL							\$211,000

Rec Code	Description	Area	Prelim Cost	Quantity	Unit	Unit Cost	Other Cost Explanation	Total Estimated Cost
	SUBTOTAL							\$2,479,170
	(Details)							
*	Northeast Corridor Electrification South of the Station	Other	\$43,145,800					
	Electrification South of Station							
	Track 1			5	mile	\$630,000		\$3,150,000
	Track 2			4	mile	\$630,000		\$2,709,000
	Track 3			4	mile	\$630,000		\$2,709,000
	--SUBTOTAL							\$8,568,000
	Locomotive Exchange Yard Facilities							
	Track			3	mile	\$950,000		\$3,230,000
	Electrification			3	mile	\$630,000		\$2,142,000
	Turnouts			22	each	\$300,000		\$6,600,000
	Sitework			94	acre	\$10,700		\$1,005,800
	Loco. Facility			100,000	sft	\$200		\$20,000,000
	Roads, Parking			5,000	foot	\$200		\$1,000,000
	Fuel, Sanding			1	each	\$600,000		\$600,000
	--SUBTOTAL							\$34,577,800
	SUBTOTAL							\$43,145,800
	(Details)							
*	Implement TOD Principles	Other	\$300,000					
*	Signage Program		\$720,000					
	Subtotal of Program Costs		\$121,533,318					
	Contingency for Engineering and other soft costs		\$42,284,661					
	Total		\$163,097,979					

D

APPENDIX D: Contacts



Project Team

PREFIX	FIRST NAME	LAST NAME	POSITION /TITLE	AFFILIATION	ADDRESS	ADDRESS 2	CITY	ST	ZIP CODE
Mr.	Freddie	Fuller	Associate Director	Mass Transit Administration, District Department of Transportation	2000 14th St, NW	6th Floor	Washington	DC	20009
Ms.	Tomika	Hughey	Transportation Planner	Mass Transit Administration, District Department of Transportation	2000 14th St, NW	6th Floor	Washington	DC	20009
Ms.	Circe	Torruellas	Program Analyst	Mass Transit Administration, District Department of Transportation	2000 14th St, NW	6th Floor	Washington	DC	20009
Mr.	Gary	Burch	Principal Project Manager	Parsons Transportation Group	100 M St, SE	Suite 1200	Washington	DC	20003
Mr.	Joe	Springer	Transportation Planning Lead	Parsons Transportation Group	101 M St, SE	Suite 1200	Washington	DC	20003
Mr.	Winn	Frank	Senior Project Manager	Parsons Transportation Group	102 M St, SE	Suite 1200	Washington	DC	20003
Ms.	Ellen	Morrison	Senior Planner	Parsons Transportation Group	103 M St, SE	Suite 1200	Washington	DC	20003
Mr.	Carmen	Gilotte	Senior Environmental Planner/Graphic Designer	Parsons Transportation Group	104 M St, SE	Suite 1200	Washington	DC	20003
Ms.	Maureen	Mills	Principal Environmental Planner	Parsons Transportation Group	105 M St, SE	Suite 1200	Washington	DC	20003
Mr.	Bill	Bascus	Senior Planner	Parsons Transportation Group	106 M St, SE	Suite 1200	Washington	DC	20003
Mr.	Cecil	Niles	Traffic Engineer	Parsons Transportation Group	107 M St, SE	Suite 1200	Washington	DC	20003
Mr.	Michael	Vitek	Associate Engineer	Parsons Transportation Group	108 M St, SE	Suite 1200	Washington	DC	20003
Mr.	Donald	Lipscomb, Jr.	President	Del Studio Architects	750 MD R 3 S	Suite 7	Gambrills	MD	21054
Ms.	Linda	Durand	Graduate Architect	Del Studio Architects	750 MD R 3 S	Suite 7	Gambrills	MD	21056
Mr.	Mike	Hough	President	Precision Systems, Inc.	4301 Connecticut Ave	Suite 106	Washington	DC	20008
Mr.	Jian	Wei	Traffic Engineer	Precision Systems, Inc.	4301 Connecticut Ave	Suite 106	Washington	DC	20009
Ms.	LaRuby	May	Public Involvement Consultant	CSMI	3215 Martin Luther King Jr. Ave SE		Washington	DC	20032

Technical Advisory Committee

PREFIX	FIRST NAME	LAST NAME	POSITION/ TITLE	AFFILIATION	ADDRESS 1	ADDRESS 2	CITY	ST	ZIP CODE
Ms.	Suzanne	Allan	Assistant Director for Planning	Office of the Architect of the Capitol	Supreme Court Building, 1 First Street, NE	Room B14	Washington	DC	20543
Mr.	Steven	Alleman	Program Director	Amtrak	360 West 31st Street	4th Floor	New York	NY	10001
Ms.	Nzinga	Baker	Vice President	Union Station Redevelopment Corporation	10 G Street, NE	Suite 504	Washington	DC	20002
Mr.	David	Ball	President	Union Station Redevelopment Corporation	10 G Street, NE	Suite 504	Washington	DC	20002
Ms.	Melissa	Barlow	Community Planner	Federal Transit Administration	1990 K Street, NW	Suite 510	Washington	DC	20006
Ms.	Melissa	Bird	Neighborhood Planning Coordinator - Ward 6	DC Office of Planning	801 North Capitol Street, NE	Suite 4000	Washington	DC	20002
Ms.	Dana	Chieco	Planning & Program Manager	NoMA Business Improvement District	131 M Street, NE	Suite 105	Washington	DC	20002
Ms.	Anne	Carey	Project Manager, DC Circulator	Washington Metropolitan Area Transit Authority	600 Fifth Street, NW		Washington	DC	20001
Ms.	Ann	Chisholm	Government Relations	Washington Metropolitan Area Transit Authority	600 Fifth Street, NW		Washington	DC	20001
Ms.	Karen	Cucurullo	Transportation Planner	National Park Service-National Capitol Region	1100 Ohio Drive, SW		Washington	DC	20242
Ms.	Linda	Davenport	Superintendent, Passenger Services	Amtrak	900 Second Street, NE		Washington	DC	20002
Mr.	Chris	Delfs	Ward 6 Transportation Planner	District Department of Transportation	2000 14th Street, NW	6th Floor	Washington	DC	20002
Mr.	Terrel	Emmons	Director for Planning and Development	Office of the Architect of the Capitol	Supreme Court Building, 1 First Street, NE	FHOB, Suite 523	Washington	DC	20543
Mr.	Stephen	Flippin	Director, Federal Affairs	CSX	1331 Pennsylvania Avenue, NW	Suite 560 South	Washington	DC	20004
Mr.	Frank	Fulton	Chief Communications Officer	MARC	6 St. Paul Street		Baltimore	MD	21202
Mr.	Brian	Glenn, P.E.	Administrator	Federal Transit Administration-Washington Office	1990 K Street NW, Suite 510		Washington	DC	20006
Mr.	Thomas	Harrington	Director, Long Range Planning	Washington Metropolitan Area Transit Authority	600 Fifth Street, NW		Washington	DC	20001
Mr.	David	Hayes	Regional Planner and Transportation Liaison	National Capital Region, National Park Service	1100 Ohio Drive Southwest		Washington	DC	20242
Mr.	Jaime	Henson	Ward 6 Transportation Planner	Transportation Policy and Planning Administration District Department of Transportation	2000 14th Street, NW	7th Floor	Washington	DC	20009
Ms.	Christine	Hoeffner	Manager of Planning	Virginia Railway Express	1500 King Street	Suite 200	Alexandria	VA	22134
Mr.	John	Isaacson	Sr. Director, Design & Construction	FirstGroup America Inc. /Greyhound Lines Inc.	350 N. St. Paul Street		Dallas	TX	75201
Ms.	Sandra	Jackson	Program and Project Development Team Leader	Federal Highway Administration-DC Division Office	1200 New Jersey Avenue, SE		Washington	DC	20590
Mr.	Doug	Jacobs	Deputy Associate Regional Director for Lands, Resources, and Planning	National Park Service - National Capital Region	1100 Ohio Drive, SW		Washington	DC	20242
Mr.	Theodore	Knappen	Government Affairs Representative	Greyhound Lines Inc.	1101 14th Street, NW		Washington	DC	20005
Mr.	Dave J.	Kubicek	Assistant General Manager, Rail Operations Delivery	Washington Metropolitan Area Transit Authority	600 Fifth Street, NW	Room 5G14	Washington	DC	20001
Mr.	C. Andrew	Lewis	Senior Historic Preservation Specialist	DC Office of Planning - Historic Preservation Office	2000 14th St NW, 4th floor		Washington	DC	20009
Mr.	Mark	Lindsey	General Counsel	Federal Railroad Administration	1120 Vermont Ave, NW		Washington	DC	20590
Mr.	Thomas	Luebke	Secretary	U.S. Commission of Fine Arts	401 F Street, NW	Suite 312	Washington	DC	20001

PREFIX	FIRST NAME	LAST NAME	POSITION/ TITLE	AFFILIATION	ADDRESS 1	ADDRESS 2	CITY	ST	ZIP CODE
Mr.	Barry	Lustig	S.V.P. Leasing/Development	Ashkenazy Acquisition Corporation	433 Fifth Avenue		New York	NY	10016
Ms.	Joan	Malkowski	Vice President & General Manager	Jones Lang LaSalle	1801 K Street, NW	Suite 1000	Washington	DC	20006
Mr.	David	Maloney	State Historic Preservation Officer	DC Office of Planning	2000 14th Street NW	4th Floor	Washington	DC	20009
Mr.	Peter	May	Associate Regional Director for Lands, Resources, and Planning	National Park Service - National Capital Region	1100 Ohio Drive, SW		Washington	DC	20242
Ms.	Robin	McElhenny-Smith		Washington Metropolitan Area Transit Authority	600 5th St, NW	Room 5B-26	Washington	DC	20001
Ms.	Colleen S.	Mitchell		DC Office of Planning	2000 14th St NW, 4th floor		Washington	DC	20009
Mr.	Kenneth	Mobley	Project Manager	Michael Baker Jr., Inc.	3601 Eisenhower Avenue		Alexandria	VA	22304
Mr.	Daniel	Nichols	Assistant Chief	U.S. Capitol Police	119 D Street, NE	Room 102	Washington	DC	20510
Ms.	Elizabeth	Price	President	NoMA Business Improvement District	131 M Street, NE	Suite 105	Washington	DC	20002
Deputy Chief	Thomas P.	Reynolds		Uniformed Services Bureau - U.S. Capitol Police	119 D Street, NE		Washington	DC	20510
Mr.	David	Ricker		MARC Maryland Transit Administration					
Ms.	Karen	Roscher	Transportation Program Specialist	Federal Transit Administration	1760 Market Street	Suite 500	Philadelphia	PA	19103
Mr.	Rick	Rybeck	Deputy Associate Director for Transportation Policy and Planning	District Department of Transportation	2000 14th Street, NW	6th Floor	Washington	DC	20002
Mr.	Ira	Silverman	Director, Transit Operations Initiatives	MARC Maryland Transit Administration	1515 Washington Boulevard		Baltimore	MD	21230
Ms.	Amy	Tarce	Community Planner	National Capital Planning Commission	401 Ninth Street, NW	North Lobby, Suite 500	Washington	DC	20004
Mr.	Simon	Taylor	Director of Planning	Maryland Transit Administration	6 St. Paul Street		Baltimore	MD	21202
Mr.	David	Tuchmann	Development Manager	Akridge	601 13th Street, NW	Suite 300 North	Washington	DC	20005
Mr.	Frank	Valadez	Lead Architect, Managing Partner	Ashkenazy Acquisition Corporation	1218 E. Euclid Street		San Antonio	TX	78212
Ms.	Alexa	Viets	National Mall & Memorial Parks	National Parks Service	900 Ohio Drive SW		Washington	DC	20024
Mr.	Ken	Wiedel, Jr.	Assistant Superintendent Stations, Mid-Atlantic Division	Amtrak	50 Massachusetts Avenue, NE		Washington	DC	20002
Mr.	Derrick	Woody	Coordinator, Great Streets Initiative	Office of the Deputy Mayor for Planning & Economic Development	1350 Pennsylvania Avenue, NW		Washington	DC	20001
Ms.	Patricia	Zingsheim	Associate Director of Revitalization and Design	DC Office of Planning	801 North Capitol Street, NE	Suite 4000	Washington	DC	20002

Community Leaders Committee

PREFIX	FIRST NAME	LAST NAME	AFFILIATION	ADDRESS	CITY	ST	ZIP CODE
Mr.	Skip	Coburn	1st District Citizen’s Advisory Council	1526 6th Street, NW	Washington	DC	20001
Mr.	Alva	Abdusalaam	5th & M Streets Council	1158 Fifth Street, NE	Washington	DC	20002
Mr.	Joseph	Fengler	Advisory Neighborhood 6A	PO Box 75115	Washington	DC	20013
Mr.	David	Holmes	Advisory Neighborhood 6A03	919 Massachusetts Ave., NE	Washington	DC	20003
Ms.	Julie	Olsen	Advisory Neighborhood 6B	921 Pennsylvania Avenue, SE	Washington	DC	20003
Ms.	Karen	Wirt	Advisory Neighborhood 6C	PO Box 77876	Washington	DC	20013-7787
Mr.	Roger	Moffat	Advisory Neighborhood 6D	25 M Street, SW	Washington	DC	20024
Mr.	Gene	Cope	Better Neighborhood Association	1239 New Jersey Avenue, NW	Washington	DC	20001
Ms.	Julia	Christian	Capitol Hill Association of Merchants & Professionals (CHAMPS)	222 7th Street SE - PO 15486	Washington	DC	20003
Mr.	Topher	Cushman	Capitol Hill Association of Merchants & Professionals (CHAMPS)	222 7th Street SE - PO 15486	Washington	DC	20003
Ms.	Patty	Brosmer	Capitol Hill Business Improvement District	30 Massachusetts Avenue, NE Union Station Garage Bus Level	Washington	DC	20002
Mr.	Dick	Wolf	Capitol Hill Restoration Society - CHRS Office	420 10th Street, SE	Washington	DC	20003
Mr.	Miles	Groves	Downtown Neighborhood Association of Washington, DC	PO Box 77932	Washington	DC	20013
Mr.	William	Barrow	H Street Community Development Corporation	501 H Street, NE	Washington	DC	20002
Mr.	Anwar	Saleem	H Street Main Street	961 H Street, NE	Washington	DC	20002
Mr.	Cary	Silverman	Mount Vernon Square Neighborhood Association	PO Box 50526	Washington	DC	20091-0526
Mr.	Idus	Holmes	Martin Luther King Near Northeast Community Improvement Corporation	1326 Florida Avenue, NE	Washington	DC	20002
Ms.	Loree	Murray	Near Northeast Citizens Against Crime & Drugs	1134 Seventh Street, NE	Washington	DC	20002
Mr.	Jerry	Coleman	Northwest One Council, Inc.	128 M Street, NW Suite 15	Washington	DC	20001
Ms.	Naomi	Mitchell	Office of Councilmember Tommy Wells	1350 Pennsylvania Avenue, NW	Washington	DC	20004
Mr.	Monte	Edwards	Stanton Park Neighborhood Association	330 E Street, NE & P.O. Box 75085	Washington	DC	20002, 20013-5085
Ms.	Beverly	Estes	Sursum Corda Resident Council	1112 First Terrace, NW	Washington	DC	20001
Mr.	David	Chestnut	Sursum Corda Resident Council	1112 First Terrace, NW	Washington	DC	20001
Mr.	Charles	Allen	Ward 6 Democrats	1350 D Street, NE	Washington	DC	20002
Mr.	Thomas	Grahame	CHRS Transportation Committee Chair	1008 N Carolina Ave., SE	Washington	DC	20003
Ms.	Anne	Phelps	Advisory Neighborhood 6C	PO Box 77876	Washington	DC	20013-7787
Mr.	Tony	Richardson	Advisory Neighborhood 6C	PO Box 77876	Washington	DC	20013-7787
Mr.	Ryan	Velasco	Advisory Neighborhood 6C	PO Box 77876	Washington	DC	20013-7787
Mr.	Tom	Hamilton	Advisory Neighborhood 6C	PO Box 77876	Washington	DC	20013-7787
Mr.	Mark	Dixon	Advisory Neighborhood 6C	PO Box 77876	Washington	DC	20013-7787
Mr.	Joe	McCann	Advisory Neighborhood 6C Transportation Committee				
Mr.	Jon	Kelly	Advisory Neighborhood 6C Transportation Committee				

